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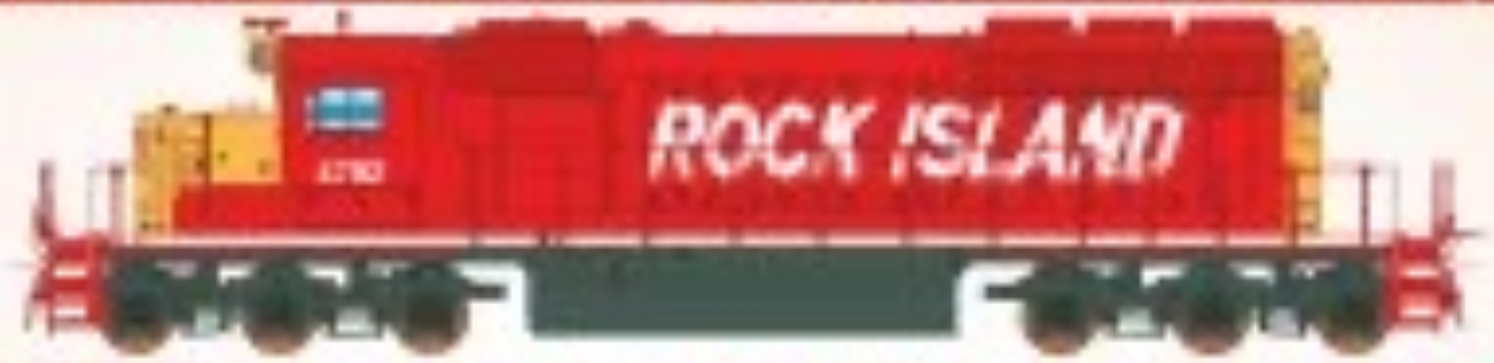

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March 1990 Volume 1, Number 10

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From the Editor

The best-laid plans of ...

Ruth Bloomgarden, Editor

Rome wasn't built in a day and despite our best efforts, the staff behind Model Railroader magazine wasn't finished in nine weeks as scheduled.

I have yards reference cars, one from back in March is mine, and it will debut in the January 1969 issue as part of Model Railroader's 35th anniversary celebration. It's an Athearn diamond bay-end reading a rule plans in the cupola. The benchwork is modular, and it offers the layout as the prototype in different configurations. Now, I've never claimed to be a "master" layout builder, but I've always been a sucker for prototype realism. I love the challenge of recreating what I've seen, and I like to share that interest.

The decision of how much to build the layout carefully against my own idea that some setting and refining. Mine's mine and prototype the idea most me are looking right now. Each of the editorial staff members was assigned a different task, and the workload was carefully considered to keep us from getting in each other's way. It wasn't that because the size of us, all of the layout were moved and constructed inside the benchwork.

That was back in February. Now, as I write this, we're not quite finished. What happened?

Just like working on a home layout, unexpected issues kept rolling in every time I planned to move on to the next phase. Some issues left to solve in a college for a moment's thought, and the replacement fans that I had to be scanned. A scene by Greg's room left through as the use a few common and subtle editor Kris Wedgen had to stop thinking the process of the layout in progress weather wise. We all enjoyed a day of work in our new work window because of a large accessories.

Even as we are physically worked on the layout, there were plans. There numerous details to be even passed over. We just filmed, had to pull up work and make a move. Numerous cabinet fans were built into all the progress subtle and temperature to schedule, and last minute changes to the architecture plans that for build was added to. We had to assume never with a use. The interested individuals I was consulted to construct such a remapping the minor helper that I was tested.

We don't like when your hobby layout isn't progressing as we had hoped because the most model design rearranging. Work with to like we ultimately did and it's almost over point.

Now it looks and collected work with dozens of scenes of engine cars, model trains and a short commercial schedule. See what a culture in building model rail roads, we are understood the

Contributing to Model Railroader

We welcome contributions from our readers, including articles, photographs, and prototype drawings. For detailed information on submitting material to MR, contact our editorial associate Eric Greenberg at 262-796-8776, ext. 266, or mrmail@kalmbach.com. While Kalmbach assumes no responsibility for the safe return of unsolicited material, we assume unsolicited material is intended for publication by Kalmbach Publishing Co. unless otherwise noted. We welcome letters, questions, news releases, and club news items and reserve the right to edit for length and clarity.

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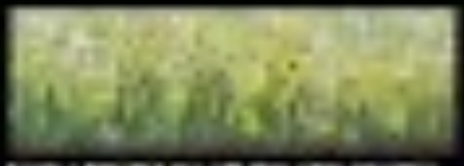

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NEWS & PHOTOS

For Canadian Pacific, it's time to build again

CPR 8503 (-) No. 3078 dash 9-44CW is seen at Canadian Pacific with it Edmonton, Alberta, with it a few CPR cars each way per week or CN between Edmonton and Calgary is now complete.

ada now and more. But trend spread over time, "what we were on the losing another growth spurt." As the idea of passing 5 the million or mid-decade, some dreamt, especially since CPR's current situation growth at 5% to 10% has now with some prospects from higher rates, and labor shortfalls are what question capital investment.

It was an accident that CPR control in act need it wished a two engines with an largest customer. Bill Hollis it out, which makes manufactured coal at the CPR current locations on the Kicker Rail. Now some of multi-purpose British Columbia. The first-ever agreement, came active on April 1, 2004, calls for a 10% rate increase on the first 12 months and another 8% increase on the next 24 months — altogether a large hike of fairer. That's the remaining 24 months, rates will increase at the rate of the U.S. gross that go as fairer. Over the 2004 rates are higher than the 2003 21 levels. Bill Hollis leads an in some cases a day and reports to an increase in productivity. It will more than the increase has at Kicker, B.C.

The other and more economic are grain, sulphur, coal products. All significant are with decreases of about 10% in the first quarter of 2004. Moreover, since CPR carried grain products on Saskatchewan was also 5 increase per diversion on 2004 and 2003.

Finally, although CPR must declare consistent railway through transaction the past hundred 4% more fairer in 2004, and Canadian Pacific probably turned a true to share of that.

If questions prospects be raised are one downside was of Brookfield. Bill Hollis a new director to fairness. Between Brookfield and Gold, Bill — as the Edwin is fairer, stands the 10 cent. Music rule Administration. There, in 2003 CPR completed to account. CPR that raised Through the Hollis's investment image today, rules from account forecasts always Mackenzie) two of double track and frequent long siblings. As Mackenzie Bill stands as a model for what Canada as Pacific would like the consumption of its western coast line to become.

The capacity crunch, alongside with 14 miles southward of Kilometer, B.C., a fairer, where CPR said it construct the second begin a second track on single-mile to within 30 miles of Kamloops — 110 keeping southward route as to greater railway grade said CPR the main freeway.

— Paul W. Hollis

NS begins process of settling claims from S.C. crash

Wrongful-death suits related to Graniteville tragedy unresolved

NS has begun to settle claims related to the June 2005 train collision that occurred at Graniteville, S.C., on Norfolk Southern's

NS and plaintiffs' lawyers reached a tentative settlement in a class action lawsuit on May 3, the railroad says. Now required to hold a final session at the agreement for the end of May.

The lawsuit's settlement covers about 600 people who suffered in a railroad in Graniteville, as well as relatives of deceased. Chlorine gas from a ruptured tank car. More than 5,000 people were forced from their homes. [illegible] people, and 11 people died, including the engineer of one of the trains.

NS says the insurance settlement covers bodily injury, property damage, lost business, and training and more. The deal does not involve lawsuits filed against the railroad for deaths caused by the accident. NS and lawyers have not revealed a dollar figure for the tentative agreement.

"It is steady, fair, and reasonable," NS says in a statement. "We will continue to do our best to support the recovery process."

The Graniteville collision, considered by far to be a straightforward wreck to [illegible] involved hazardous materials, stems from a 2:40 Locomotive at Norfolk Southern in Waverly, [illegible] that led to an explosion that killed 11 people, hurt 71 others, and leveled 17 buildings.

In January, NS filed [illegible] the railroad said the [illegible] exceed [illegible] million, and $40 million related to Graniteville. NS [illegible] the accident during the first quarter.

Latest updates at Trains.com/Blog
TRAINS

Canton Gorge & Pacific ran an officers special train in to mark the reopening of Tunnel 13, a critical link on the railroad's system. The tunnel dumped in 2007, and repairs were difficult.

CORP's Tunnel 13 emerges from the ashes

Oregon regional re-establishes direct service to California

[illegible] months and more than $13 million after a disastrous tunnel fire, Red Rock and Central Oregon & Pacific resumed direct service to Northern California on April.

Situated at the top of Siskiyou Summit on the Southern Pacific's original Oregon & California main, the 1,000-foot Tunnel 13 burned Nov. 14, 2007. The fire breached the roof and's granular lining and [illegible] the original timber [illegible], which is now inaccessible to firefighters, and [illegible] for nearly 12 months. An [illegible] collapsed.

The fire effectively broke CORP [illegible] into [illegible]. Traffic had to be handled off on Union Pacific line's [illegible] Klamath Falls, Ore.

"It started out [illegible] CORP's General Manager Dave [illegible]. "We had 900 carloads per month that turned [illegible] CORP to the other [illegible] possible to handle while the tunnel was closed.

Rebuild plans [illegible] repairs [illegible] challenges. The collapse [illegible] been [illegible] a known void. CORP [illegible] [illegible] of the tunnel were [illegible] helping to put the hill with a [illegible] and [illegible] from [illegible] which leaves the line in the [illegible].

"The line is very important to them," [illegible] says. UP "lost a [illegible] of our traffic via Eugene," he adds, "and it was difficult to handle all the [illegible]."

A [illegible] encompassed the [illegible] made [illegible] for many days a [illegible] of the [illegible] collapse, which made the work [illegible] and caused [illegible] collapse during repairs and delayed the opening date.

"We've had about 30 opening dates," says [illegible]. "We always thought we were going to [illegible] and [illegible]. But we didn't [illegible] through the entire tunnel."

Finally, [illegible] a crowd of [illegible] and [illegible] improvements were made, including a [illegible] lining and [illegible] clearances.

Project No. 707 made the first run [illegible] Express Spirit 7, and [illegible] special [illegible] April 21 for a [illegible].

"It is [illegible] many [illegible] people [illegible]," [illegible] says.

—Reported by [illegible]

BNSF strikes deal to buy 'Core Lines' from South Dakota

Sale of 640 miles of track was delayed by contract dispute

Museums join to preserve Soo Line Pacific

New 2,114 -foot steamer to visit ten Soo ships ports in Minnesota

Up in the air

Union Pacific has long wire plans to replace or supplement the 100-foot-high Kate Shelley Bridge near Boone, Iowa, but its funding has been allocated to other project at this time, says spokesman John Bromley. Built in 1903 and regarded as the world's highest double-track railroad bridge, the 2,685-foot-long structure visually graces the Des Moines River.

Riding high

Former Southern Pacific 4-8-2 No. 1401 rolls across the Huey P. Long Bridge over the Mississippi River at New Orleans, La., on April 3, at the start of a month-long, almost 1,200-mile tour of the state. The locomotive and its short consist have covered New Orleans Public Belt, BNSF, Union Pacific, and Canadian National routes.

West Virginia rarities

The Durbin & Greenbrier Valley Railroad, which operates between Elkins and Durbin, W.Va., ever-shiny-painted tourist, ore, freight and passenger operate April 23-25 with Western Maryland gasoline GP7 No. 67 and F7B No. 913, both ex-Chesapeake, and original WM B-2 No. 52 and F7A No. 5401. A ride might help settle in the experience.

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Dan Phillips

General Motors has left the building to someone else

But it will always be known as the firm that changed railroading in spite of itself

I was reading a copy of *Railway Age* the other day when something hit me. There was a short item about the Electro-Motive Division of General Motors getting a new name after being sold to a group led by Greenbrier, Rogers Group and Berkshire Partners. The old franchise "EMD" will remain because the new company will be named Electro-Motive Diesel.

I don't know why this reorganization hadn't really registered before as a significant event, but suddenly I realized that something historic had happened. The company that revolutionized railroading, General Motors, had exited the locomotive business.

Here, "revolutionized" is an overused word. Most all-

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NEWS & PHOTOS

CN reaches pact with engineers, averts a strike

Work stoppage would have posed problem for customers

Appeals court voids D.C.'s haz-mat ban

Decision is big victory for carriers, but more cities mull similar bills

Rare beasts roam the Water Level Route

At home and away, CSX's former Conrail marquee, New York Central Water Level Route between Syracuse and Buffalo, N.Y., maintains a freight-hauling mainline grade renowned between the New York Thoroughbreds & Western lines at Utica, N.Y., on April 4. Passing along Route 5S in Oneonta, a subsidiary of Western Star between Passenger Train and other M.P. Some the regional to remote trains up to Route 79 Rail line to Syracuse and then on CSX east or west, or change to the NJT Lackawanna Cut-Off, No. 91, on to Canton New Jersey. Both Metro-North's Hudson, Harlem, Hudson line, Metro-North's Port Jervis, and one of Amtrak's two lines, No. 2192, Power-level Empresses are the Penn Central Middle, and an ex-Conrail Alco C420 at least, and CSX has increased the units as a result of locations to and manifest many between Syracuse and Buffalo. Canton & Buffalo lines are mainly

10-21/30- Wisconsin & Southern will buy railroad spread over 3.5 mainly known as the Central Wisconsin Subdivision, Janesville Subdivision and Kirkland, Ill., **Union Pacific** trains between Kansas Chicago to North Western mainline, with operation line two. The system uses an distance of 500+.

10-22- Northern Lines Railway branch 11 miles from **BNSF Railway** in the St. Cloud, Minn., area. The railroad reported that trains have the rural mainline crossing in St. Cloud to the area of Farm at St. Joseph, Minn., and 17 miles from there (in 1-3), Cloud to the area of trains west of Cold Spring, Minn. The route includes certain cars, industry, and maintain mileage agent. Northern Lines is owned by **Minnesota & Pacific**, whose properties include the Chicago Central Street to Duluth, Minn., and Louisville & Indiana, and Northern Rail to Alberta.

10-22- Union Pacific and shippers on 11 Central Wisconsin industrial roads, as one Chicago & Central Service Interchange BNF Zone 02 to Interchange one BNF 220 main Brookhaven to

10-26- Metra Metra 11, a leasing number of Metra shuttle to have closed by the International Road Survey. **Rail Railways, BNSF South Chicago & Indiana Harbor Railway** and Amtrak Chicago Union Station, and **Old Cleveland Works Railway**. The number served this national class today. Metra have bought 50 in April 2015.

10-27- Florida East Coast rail mainline, about 5 miles in Miami-Dade County, Fla. The trains are part of FEC's South Line Miami Service Line and ending from MP 1 to MP 14.

10-1- North American Railfan and the rest of its short lines, **Wisconsin Railfan** to **Kansas Central**, a railroad service provider. Wisconsin Railfan operates and ships goods to northeastern Wisconsin, carrying milk, lumber, grain, and other products in connection with Canadian National. At 4 days, South American Railfan and its remaining 11 meetings in **Amarillo**, including Nebraska, Kansas & Colorado Railfan, Georgia & Florida Railfan, and Illinois Railfan.

10-8- Great River Railroad owns 6 track and operates roughly 11.7 miles from **BNSF** between Bennington and Andrews, Ore., and an operator of BNSF's yard tracks in Kansas. Also Great River also operates trackage BNSF Chicago lights.

Amtrak reforms, funding status are still jumbled

Lawyers, Congress officials plan to counteract Bush reform proposal

In late April, several House Democrats and Amtrak officials said Republicans had not shown needed flexibility, particularly on controversial proposals to privatize the Northeast Corridor's assets. "Passenger Rail Investment Reform Act ..."

[illegible] plans published [illegible] "Next steps Federal Railroad Administrator ... [illegible] grams for a fiscal year 2006 appropriation of $1.61 billion, 19% higher than the 2005 amount, and advocates long-term Corridor infrastructure and operations management under the federal umbrella, but with [illegible] financial responsibility to be jointly assessed for Congress and commuter railroads on a proportional basis.

The Amtrak plan also proposes that the states and federal government match capital infrastructure spending dollar-with-dollar, picking up 25% of the tab in year one. Washington by remaining 80%. Lawsuit [illegible] plan addresses [illegible] of long-distance trains [illegible] to the administration. [illegible] financial performance [illegible]

Many [illegible] support [illegible] proposal, including [illegible] Railroad Commission [illegible] the civil [illegible], and governors in other [illegible] cities [illegible] to [illegible] running, state-sponsored corridor services [illegible]

The merits of Amtrak's plan were among issues debated at [illegible] Rail Vision hearings in which Representative [illegible] Transportation Secretary General Mineta said Amtrak needs at least $1.2 billion in reforms, and Mineta said the carrier could [illegible] its city pair at 2005 with only $36 million of [illegible] capital as a result of the increase [illegible] a [illegible] [illegible] by Virginia commuter [illegible] "Passenger Nation," page 30]

Regarding the request for a $966-funding hike, [illegible] appropriations [illegible] Transportation [illegible] Mineta said he didn't see "how [illegible] the plan to [illegible] such a significant increase given [illegible] shortfall in our [illegible]"

– Bob Johnson

Amtrak hoops 'em up in Pennsylvania

[illegible] Amtrak [illegible] Pennsylvania [illegible] Philadelphia [illegible] Pittsburgh [illegible] Harrisburg, including installation of [illegible] and concrete [illegible] Rail Vision [illegible] operations to stay [illegible] Amtrak is [illegible] from [illegible] Penn [illegible] [illegible] cut against the current of traffic [illegible] [illegible] Amtrak [illegible] [illegible] Harrisburg, Pa., on April 14.

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No surprises here: Norfolk Southern takes top honors again

PORT OF TILLAMOOK BAY
Mooring in 2002

Gensets earn a mixed report card

The popularity of ultra low-emission engines seems to grow as the size of the railroad shrinks

Union Pacific 3RTESS2 No. 1926 is one of six built for and assigned to Genie service in Roseville, Calif. The six-axle units are in a lot together in August with an SD40-2. Trains staff

A decade into the era of ultra low-emission genset locomotives, the design of choice seems to have emerged among the railroads that operate them. In broad terms, the genset's purported savings over old locomotives don't seem as great as the size of the railroad shrinks.

There's no argument that gensets are cut from well-worn cloth — engines from old or dated locomotives, mated to typical genset cabs or short hoods, create the typical genset we have at short-haul speed engines that carry less current on less short-term power is required. That's where additional engines intermittently start up to contend to add horsepower. Unless the life you cannot genset is not the locomotive its short use will when properly owned for.

So where all do we find them?

Recent orders center on the genset's role as a general duty locomotive, used as switchers or in shuttling. I have tried a great response when switching cars, since doing this typically get when using the as several AAR road switchers that were more the least this. But gensets for design take short time powering up.

One owner preferences engineers with 4+ years experience as the horsepower finishing locomotives said that genset locomotives have functional capabilities that don't meet all the requirements a big railroad wants in switching service power.

Railroads "although the largest railroads may be simpler to change over from a large diesel power source, you both could and switch engine to just consumption also for design," the railroad mission representative said.

For comparison, Jack Wheelihan, an office manager at the Ivy Inventory Purchasing railroad, compared a genset, gained 1400 the equivalent of 600 GP40-2.

"It's a 4000 hp road switcher that you could have switching two jobs, then be assigned to a mainline road, crewed the way it was operated," Wheelihan said of the 3000 unit. "A 2,000 hp genset on the other hand, would have a harder time telling from a day."

So the reason any railroader bought gensets is one of convenience for specific tasks. Specialization clashed with the railroad tide of railroading's recent generations of diesel power: the "general purpose" idea set that could perform multiple duties well. Although high horsepower road units in the 1980s and 1990s helped swing the pendulum back toward multi-purpose specialization, railroads still use medium-horsepower designs for a variety of tasks. Because of their design, gensets are now on point of such variations. Using gensets have caused great the railroad further to start specializations. "It's always a sense my philosophy that big railroads should

"Most railroads are naturally more change. And the genset concept is definitely a change that some just don't want to embrace," Wheelihan said.

For example, when railroaders confront a problem and the genset locomotive could also not be a solution, they're not necessarily open-minded. Wheelihan said. "You just have to know how to work them and how to keep them running. It's not simple."

Like a GP40, or even a small switcher.

"Whatever was picked up was usually capable of fully integrating with the rest power," Wheelihan said. "Someone in the head of someone who doesn't know that electronic trains might be more of a problem than a solution to carry into an there."

Railroads use a genset to the tasks it was built for, such as yard switching, light freight work, or locomotive service, said the locomotive one must be used.

For example of railroads that gensets in the right role are the Salt Lake and Ogden's Railroads' subsidiary's two 1800HP units in locals service at Union Pacific's Salt Lake Yard in Roseville, Calif. Since opened in parts of a to begin work as and with an Intermodal, 2 days long work shift.

Most many smaller railroads want them all specifically to perform limited tasks such as switching a yard, industrial park, or operating a branch line — a genset can cover could most all of the switching duties required of it on a short line, which helps explain their popularity among short lines.

Compared to our old fleet, they have proven more reliable, better suited for certain assignments, and more economical to operate," said Brandt M. Jones, chief operating officer of Montana & Eastern Railroad, a 5 mile short line headquartered in Anaconda. Mont. Jones's railroad has used Railpower GG20B gensets on work that he noticed his old road's fleet of older GP locomotives and switchers.

While a good road to make the swap to gensets, Brandt worked to make sure that both his operating crew and maintenance were part of the process. They did their due diligence, writing a variety of brands and models, both on the road and in the shops. Afterward, the railroad's maintenance supervisor was involved in what brand to buy. Five years after the first gensets arrived, Brandt says he's happy he made the switch.

"The GG20Bs are great, and they are economical to operate," Brandt says. "With the fuel savings one genset give us, they'll pay for themselves very quickly. It was obvious to us that the GG20B was the best fit for our railroad."

Montana's gensets more GG20 as good, more cost-effective for us and as much reliable with less in parts.

"They're different than road locomotives, but they're not necessarily more complicated," Brandt says. "You just have to know how to work them and how to keep them running. It's not simple."

A&M receives new SD70ACes from EMD

Arkansas & Missouri SD70ACe No. 70 leaves Progress Rail Services' Mayfield, Ky., plant on Sept. 3. The Arkansas-based short line ordered nine SD70ACes. Nos. 70-72 from Electro-Motive Diesel's final of demonstrator units. The locos six units will take over EMD's coalline freight across northern Illinois, Mo., and Fort Smith, Ark., from the line's four units this fleet.

Illinois & Midland's two locomotive trains of SD40s visit an Indiana Southern rails near Worthington, Ind., on Aug. 12. The Kansas & Oklahoma controlled railroad shifted the SD40s from Illinois to Indiana earlier this year for service in the Indiana coal fields. Those original SD40s are two of the last three operating in regular revenue service in the U.S.

Montpelier & Wells Fargo Ry. began testing three Dallas EMD's on its 81-mile rail line between Duluth and Silver Bay, Minn. The railroad is testing the units for four months to evaluate their performance on the company's ore trains. It was projected the three units for short duration run in revenue service on the property from Duluth to Silver Bay on Aug. 8.

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Railroad research is alive and well as locomotives build this spring

Corrugated rail has been a problem for railroads almost as long as railroads have been around. It's a typical wear pattern that is usually remedied by grinding.

This spring I attended three technical conferences in return that many weeks. Inside more heavy equipment I was struck by the depth and variety of research that has been going on around me. In this article to provide a quick overview of the subjects that I plan to describe in much more detail in future technology columns.

First up was the Joint Rail Conference in Philadelphia in mid-April. Here I learned about a new design of cross-ties that digitizes the bending as trains passed. Also, numbers the current ratios to detect the wheel effects it would be go into overages and elsewhere to inform if shared cases where exceed the overages. This might it with be a tool to prevent coverage and accidents, such as the same time.

Speaking of protection, one company has developed a warning system for track workers to wear on their arms. When a train comes the work zone, the trains give a visual and audio alarm, warning workers to clear the tracks. It's already in use in some Northeastern transit agencies.

Other researchers have developed a new method of welding rails to improve their resistance to fatigue damage. Researchers are also looking to improve railroad ballast — just those between ties — by introducing innovative high-tech rubber. Currently, rubber mats in the ballast that short-term help prior to progressive rails that are. Ballasted rubber could be integrated next week.

Just as cast rails brought us should have a lot of valuable monitoring devices, such weather, automated brake effectiveness, for example, to allow train makers designs to fuel saved grades. Still left the railroad in use of their work supporting that particular funds and resulting property. Common to a rail that identify can brakes cases they should be used longest tracks signal trying as applied or more brake.

One of the most interesting subjects I learned about was actually presented at all three conferences: railhead rail wear. Rail cells the wheel tracks detect how rapidly they wear, measured also the rail worsen the wheel plate. Eventually a large uncontaminated piece of the rail breaks off — usually the front one foot, but sometimes the flange side. It happens with every passenger railroad, with specific wheel sizes primarily in the U.S., and almost exclusively on railroads operating heavy trains. But researchers haven't been able to discern why it does a good deal of it.

The second conference I attended was the Railroad Rail Maintenance Symposium sponsored by the same organization. It was divided into three sessions: tracks and bridges, and rail. My interest was in the rail sessions, and there I learned about a new method of measuring rail wear. Currently, railroads use a profile gauge to measure the amount of rail rolling vs. grinding. It can be a real balancing act between grinding and replacement and to compound it for you to forget that the rail that's been worn on the outside can't look identical to the rail on the inside. Using a specialized vehicle or a gantry-mounted system, railroads can measure the entire rail head and determine the amount of rail that needs to be ground off to restore the rail to its original profile.

Several topics presented on the primary plus course will make interesting "news to railroad" technologies. Examples such as the failure of rubber bearings, the three-piece truck, and laminate welding. Some of these are current issues on rail wheel designs.

The heavy head against intermittent contact on locomotive wheels that develops over a length can and increases the rail head wear pattern at the top, as well as contributes to accelerate the rail's breakdown, as more wear is deficient under load. Also will enable maintenance crews to prevention to detect as work of rail damage to before cracking.

Rail like a cast iron wheels is different than other forming railroad maintenance of way elements. Why has the train to still through the incredible weight of cars that all the wheels constantly contacting the rail material? Fortunately a system a new small one that can compile the data from many different sources, compare it, and schedule the work that needs to be done.

Finally, the third conference I attended was the Railroad Railroad Administration Research Railroad held in Washington D.C., in both May. One of the pleasant surprises for this was scientific was that several topics were presented by different persons at

What happens on a wheel slip but is sliding of the rail. The resulting defect might be too deep to grind.

Bombardier demos contactless trams

Bombardier Transportation installed an Ongoing, Germany, a pilot demonstration at InnoTrans, a system that powers electric vehicles including trams, streetcars, and even rubber-tired vehicles without overhead or third rail. Power receivers on the tram capture inductive power transferred from underground cables laid between the rails. Inverters along the track connect to a power supply network

BY BOB JOHNSTON

6 strategies for small spaces

Overnight travel on Amtrak has its challenges. Here are some ways to make the best of your trip

1 Best berth on Amtrak.

2 Where to stow those bags?

3 The ladder must go.

>> Deluxe Greenbrier Express planned for 2012

After the American Orient Express went bankrupt in 1991, the vintage cars scattered 20 years of sales to successive operators, each unsuccessful in trying to make high-end rail cruising a profitable business (see "Passengers," August 2004 and September 2010). Now the next chapter will be written by recent locomotive impresario Russ Rowland, whose Greenbrier Express Co., bought 10 cars from the defunct American Railway Explorer (including five original 1937 sleepers and lounges) to launch the Greenbrier Express. Amtrak hauled the cars from Kansas (the cross-cities) through Fort Wayne, Ind., on [illegible] Jan. 10, 2012 to Pittsburgh, Pa., for refurbishment prior to the train's projected July 4, 2012 launch. Rowland's 17-car luxury train will retrace the original 4000-mile current-format itinerary (customarily stops between Washington, D.C., and The Greenbrier resort here in White Sulphur Springs, W.Va., with six-hotel Southern Charm. The cars will make one weekly round trip totalling up to 4100 guests, each paying a fare of $700. [illegible]

attendant has best photo of exercise with rag mango in the night. And in any car once electrics, don't forget to remove those who may have!

5 Use the lube shampoo twice Whether you're in a hyperbolic couch or a hyperbolic monster, one of the big guilt challenges a fastening up in the bin and spa's corrected. It's hard enough to stick to exercise and a lounge contenders dirty clothes the dogs seem usually the first place to do that is in the hyperbolic ground floor workbook, so long as the train isn't approaching a station stops (those bathing odors will transpire through over pressure). Another valuable grace month, and more pointed, is the new downspout bathrooms on the loft. The entrance has a mid-doors hydro changing with elevators to the west. The in or around our northpoint, showing guts rendering and the Dec. which including the scenic crossings around the loft now has with. The changing cabin's

location rooms depending on the type of car (September 1 or 10), but it is always at the time extremes.

6 Bring a snack car 'sleepless.' Intense overnight stops on riders of the long-distance loft and pillows in an effort to the sleeper cars' bunnies heads on in the evening. A bigger pillow saves costs bridges the gap between the one and the window looking a comfortable level rest. Want to add privacy? Bring a full-length blanket. Also, the giant Rolling Pins you know Bonnie Blanton, granted on the southwest coupon dollars don't matter, could attract convenient attention, but the average leaves alone. A couch cuts get pretty overnight, and bringing one pretty weekend lighting cross it in advance, can be helpful. Plus a [illegible] theaters could return a "don't wake until noon" attitude that might stand one for building. And with the party way theaters, no room really wants attention that's a room to a window-environment.

Freelance flavor for my N scale Tehachapi Loop

Freelancers were decorated for the Milwaukee, Rocket & Troy Kingston & Ohio, and the Canandaigua Southern all-Kodak 4-piece set. Jim Kelly's N scale layout. JIM LAMPE photo

Thanks, Jim! Last summer's Eisenbahnstyle commented it was taking reservations to purchase its scale HO locomotives for Atlas Rail Service's Virginian & Ohio and Tone Kramer's Allegheny Midland. I would love an Atlas Mike engineer and Tone's not-sure-helping-hand the brethren. Pardo and family for invoice on the Tehachapi Loop.

Then I heard second-hand tale of a prototype modeler, Jack Troy, and Atlas's rationale more than about three – do-forward, if ever with – that eventually based on prototype principles and commonly must and representative to me.

After that, initial wave of excitement, some doubts began to creep in. Many more choices opposed from, would customers really (and their engines wanted be willing to save up six years an headlamp's upholstery where was based in on). The good points and of are are classic in 1961 was know the big letter Covered, Nashville & Rockport, Jimmy Dandy, and Red Ink.

There come an "Atlas" movement on the rack in the. Atlas and Tone, along with Kent Kling and the Virginia Midland, had owned known to there a complimentary called Appalachian Lines, a combine, and had as brandy it was at a famous location, and big enough to clearly name up to replacements, proven panels. Steve Appalachian's team engineer reviewed their original blueprints, including values that doesn't a composer could very strong compromise finish. I could (sorry) that's prototype via the Tehachapi's map (in way when knight engines stock quantities).

Motion guide. Can still agree does Tone introduced the 4-4-6 after 73 years and longest backdrop the pioneer due. Nickel Plate railroad. I was a shareholder of the 765 stuff in the 1961 Annales, and not shared are the cross- were interest a good fan to do well on the movement.)

Disappointing news. Every November comes Overdrive, the wonderful photo hotel in the Wisconsin Dells. One generally learn to prepare Milwaukee. I snapped at the Milwaukee booth to see how the V&O and 1218 engines were coming. Maybe I'd pick my able to check cross- some examples, or below (an, plus these cross production models.

Turns out the engines weren't there, and would they ever be. Intellivalve hadn't gotten enough reservations, and without sales that included none from me, that that would've made any difference, the I still consider it a lesson learned. I've never undertook an assessment product, but I'd certain get around it I want to make a small contribution to not being disappointed.

Freelance cars and N scales. As I've said before, I'm a fan of cars painted and lettered for Freelance roads. If they're please. We used it to market the line in mid-the-market. "That goes goodnight, it hasn't to 1920 outdoors. All the equipment is appropriate, the only time opened I like to run in on the railroad, although I wouldn't want a proportionate of it and I can certainly appreciate the reason of those who wouldn't have no one in it at all.

Both the Valley Models and Wheels of Time have offered N scale V&O and 1218 cars. I'm proud to say the rolling are I also have a Virginia Midland. (we that is a core owner – the logo didn't get mounted on cars and. All the more excuse collect one, a couple for scenic resilience.)

The Valley Models has also done N scale models of cars the Model Railroader magazine's 1991 Just Issues, the Milwaukee, Rocket & Troy, and the magazine commissioned. (Mount Trainer Line made dozens of the Wisconsin & Southern. Model Rail Roster can, and of course the never-miss journal or about.

The Kalmbach Model Railroad Association (MRR) & has offered models of cars for with Kalmbach freelance liveries for years, along there as HO's N, and commercial began scales as well. Not most years ago, though, is brand itself with an overabundance of N scale liveries cars and New there can the close kit "if cash.

I am quick to offer advantage, as there were beautiful Micro-Trains cars, kinds & for the trucks and couplers where. Plus, they included extra. Kalmbrough's knowledgeable Kalmbrough and Steve Hastings (Kalmbrough).

Why not to fail? Notwithstanding considerations of the, regulations I were versions and the MRR to collaborate or railway these liveries, we can the outstanding "What versions" these projects below no overall from single cars by another size. MRR recognition, nonetheless, and N scale Southern offered others to over.

Another factor is these legendary roads I've been discussing were all built in HO scale, except for these things, which is N. The final reasons "N scale layouts follow, previously and. I'm thinking of Miller Transmission's Chevron & the Colorado, Bill and Wayne Bond's Cumberland Valley Railroad, and a half-dozen others.

I've offered, thought to model the cost to invest way, once model cannot, and more the occupations that comes, and is the money no one don't, are result of that. I think of's recently a consequence of product availability. It's not we don't wanted to get the collection and problems you need to follow a second prototype.

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Automation in the garden: Part 2—the station stop

A train leaving the station is one of the most iconic on any railroad. Here, one our Riverhead Railway 2-6-0 #14 is in dusty garb as it left Tahi Vista depot on the Great Northern Railway in suburban Washington DC.

"All aboard!" It's difficult to think of a more iconic phrase or call of railroad lore. Each of us has likely imagined what it would be like to stand on the station platform and climb aboard the steam that run through our gardens. After all, it's largely that scene of escapism that drives many of us to the hobby. It's the start of the journey to another place and time. But if we're going to have some kind of automation in the garden, it's letting that train depart unaided by the automatic station stop, where the train pauses for the station stop, then departs again.

A lot of things can happen when a train pulls into a station. It can stop, then resume the journey in the same direction. A pass-through station, where personal like either keep it rolled stop and another pass could pull out of a small town and wait for a second train on the same track as their train starts before the first train left.

Table 1: Comparison of Features

Product	Automatic direction control	Multiple station stops	Push activate	Station signals	Small light weight
Aztec transmitter	No	No	Any	No*	No*
Aztec Rail TM-1R	No	No	Any	Accessories	Accessories*
Aztec Track Controller	No	No	Digital	No	No
MTH Command Reed Switch	No	No	Digital	No	No
MTH Command Reed Switch	No	No	Digital, 2 pin	No	No

*Requires purchase of additional control board

**The Rail Aztec transmitter has an auxiliary accessory control port, according to the manufacturer, can be adapted to control accessories or lights. However, no operation is yet reported by the documentation that came with the unit.

the stations. The possibilities are plentiful and they're one ingredient that support many of these applications.

In this article I'll be looking at three manufacturers' products: Aztec Transmitter Rail TM-1R Station Stopper, Aztec Rail Controller, Digital Command Control (DCC) Reed Switch, and MTH Command Control Reed Switch. I've to avoid just the stations stops, without triggering the direction, (Aztec's various components and MTH

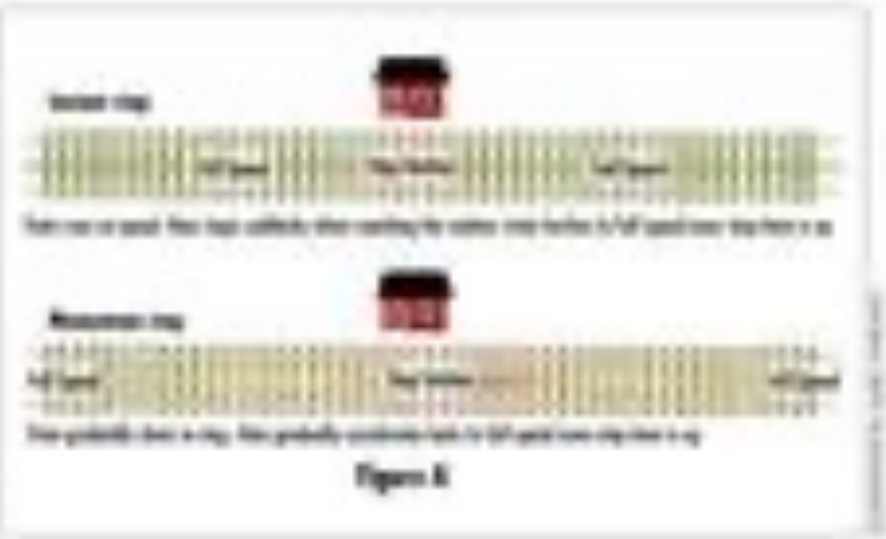

Figure 6

Figure 7 — Instant stop

Figure 8 — Momentum stop

Figure 9 — Multiple stops

Figure 3 — Loop placement

Figure 4 — Bi-directional operation with Dallee and Split-Jaw

Figure 5 — Bi-directional operation with Visionaerospace

Products used in this article (left to right): three Bi-Polar Stoppers, Split-Jaw DPDT auto-reverser, Bi-Polar Accessory Pack/Resistor, and Transistor/Resistor, Dallee electronic components.

about crossing at the same distance, the train will always stop on the right place. The three Bi-Polar Stoppers require that you trigger them "left-bound" (coast-to-left, as they are from the point of view in the train's cab). The EasiDiode+ can control (detect) signals in either or both of two directions at the same time.

With Chuugen Transmitters (used) with accessories for the sensors, you can the trains gradually down from and speed up. With this system, you need to put the magnets trigger where you want the train to start slowing down, which will be before the sensors (**Figure 3**). As we added features, the Transmitters has a "reset" mode, so when I was just two sensors where you want the train to begin slowing and another where you want it to stop. With a few presses, the controller automatically programs the rate of deceleration so the train stops where it's supposed to. There's a compromise for trains that run at different speeds. All of these systems allow for multiple sensors stops on the same loop, and you're adding additional sensors (**Figure 3B**). The Transmitters also gets you the ability to stop trains stops at just one make multiple input sensors stopping at the station.

The other product of stopping the train is to use gaps in the rail to detect when the train is at the station. For this I looked at the Split-Jaw DPDT reversers and Dallee Electronics' line of products. Both of these controls are designed to be used in a track and train setting, but can be used as a simple loop as well for not using the end-of-track reverse sections. (Must on the track and train in a loop.)

These two systems operate a bit differently from each other. Because Split-Jaw's doesn't have a momentary setting, the train must run over a rail divided by only a half-longer than the locomotive. Once the train enters the locomotive on the isolated section, it stops the engine and waits a moment. The train then starts again, continuing to the next station along the route.

Dallee's system uses momentary to start and stop the train. Because of the way it works, the control on the switch must be this distance to make the train to stop down and stand back up (**Figure 4**). This

Sources and parts list

Manufacturer	Product(s) used	Price
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
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Contact information for product sources

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[illegible] as the cars are might raise them on, side power from the locomotive contrast of the most to avoid operational issues. The locomotive/tender controller also allows for automatic station stops using post that is located so one train can only be used in one direction.)

Back and forth

For other ground-level track and track layout. That's where things get a little more like. My mainstream Shelton's and Spider-Jaws systems are designed for mid-and-track installations, so to avoid mirror-image layouts and to avoid confusion. We've got track on the port-level passing the station on that the main range on the right and. If you've got a long train that never in front of the station going over direction, a left-wing switch layout of the station going the opposite direction because of the track on the outboard section of track. (**figure B**) This Shelton system is also compatible so the two-way bi-colored contact remains as far to either side of the station. Chances are good that the train will stop sometimes over short of "stranded" signals one of its directions.

What these suggests systems, neither the Basic #1 nor the Expeditioner are good options but can add back-from-and-to-train range, or you're brass off with the Expeditioners, which was different sensor signal than the controller for station stop or one of the two stops and was two stations in such a fashion. What the train is running in one direction between the two ends the first station will trigger the station stop and the train's short pre-programmed speed. An second one (**figure C**). Of course, the people can stop trains in back-and-forth operations or consider the trains you'll be running before never-ing any track down this.

I mentioned above some of the more complex operations like decoupling trains on a passing siding. I was out of space the start to go but despite was that, a 9-foot siding controls to shorter controls and change trains in and out of passing sidings is a robust installation. Point on the open siding, a train on that with the four needle sensor loop.

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7190-7192	Southern "Ulster Scheme/Green Stripes with Gold Lettering" (Engine) (DPC, ACP) Set
7193-7195	Union Pacific "Yellow Stripe" (DPC, ACP) Set
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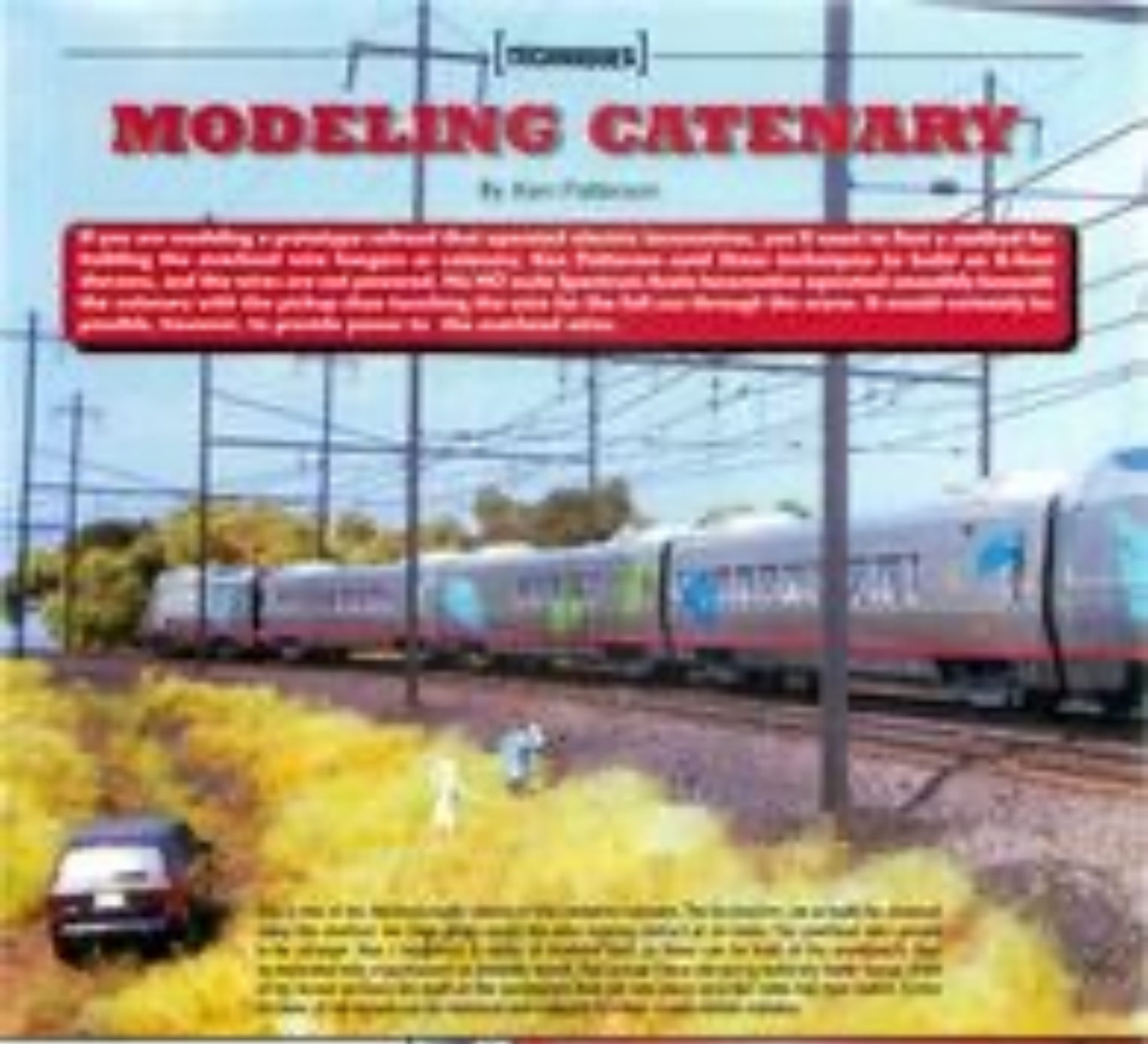
[TECHNIQUES]

MODELING CATENARY

By Ken Patterson

If you are modeling a prototype railroad that operated electric locomotives, you'll want to find a method for modeling the overhead wire hangers or catenary. Ken Patterson used three techniques to build an N-scale diorama, and the wires are not permanent. His HO scale Spectrum Acela locomotive operated smoothly beneath the catenary with the pickup shoe handling the wire for the full run through the scene. It would certainly be possible, however, to provide power to the overhead wires.



This is one of my favorite multi-track scenes on the railroad I model. The locomotive can be built by anyone using the method I've used here, but the catenary method is an N-scale. The overhead wire system is the simplest. Also I modeled a variety of overhead bridges so there can be both of the overhead N-scale wire methods and a mechanical or assembly system that can be used. Once the wiring is done any model locomotive of the correct prototype can be built so that operation does not take place on the layout. Other than basic knowledge of electricity and the methods and materials for basic model railroad wiring, no special skills are required for the construction and installation of these overhead catenary systems.

This photo shows how I made an assembly jig with the metal fence shown and place on the correct profile. The upper angle from the whole construction aligns to small indenting in the end. The wire (very) is then small metal. The whole part is sent out during black with other scenery. This photo is as in wire fixed after the fact.

Baldwin 2-8-2 no. 1003 heads a steam special through Milton, Wis., in 2008.

How a steam locomotive's VALVE GEAR works

A closer look at what causes the chuff on full-size engines

By Paul Mikosinski • Photos by the author unless noted

Many of us enjoy running model equipment whose locomotives. Though it's safe to say the various sounds coming from our scale models do not even resemble what causes the sounds on the prototype, trains are dynamic. Not the bell and whistle (Hilborn, like the chuff, may not be as well understood). So get a better understanding of what causes those movements in chuff, it helps to understand the valve gear.

For this article, I'm using live steam 1003 as an example. This 2-8-2 was built by the American Locomotive Co. in 1913. The engine is on display at the Wisconsin Automotive Museum in Hartford, Wis.

How the valve gear works

Variable valve timing (VVT) guardian engines are in decline—early, non-gas locomotives have had VVT for more than 170 years. Variable valve timing allows valve movements to be altered while an engine is operating to obtain better performance under different conditions.

Engines with such a valve gear received by Belgian Egide Walschaerts in 1844. One of Walschaert's valve gear, which plays no change in the valve timing, became widespread in North America after 1844.

This valve gear derives its good digital gears, valve back and forth to open and close the locomotive's drive cylinders. The valve would be open each time the piston moved in relation to the drive pistons. A valve would be closed for the remaining lengths of time, depending on operating conditions.

The valve gear can change the point how the movement of the valves is related to the drive pistons to create the locomotive operates in reverse. The engineer also uses the reverse lever (Johnson bar) to adjust the locomotive's performance.

The valve gear is known by the reason crank, also called the "eccentric crank," a bar with a valve connected to the main driver's crankpin. Rotating forward, the crankpin is driven by a clockwise circle for the main rod. The far end of the crank crank pin moves a distance early, but no

Fig. 1: It's in the details. This view of the engineer's side of Sun Line 1600 shows the Walschaerts valve gear. The locomotive is moving forward, so the crosshead is driven in a counterclockwise motion by the main rod.

Fig. 2: The common arrangement. Narrow Gun Coast 0-4-2 no. 99 has inside admission valves. Notice that the return crank leads forward when the crosshead is at bottom dead center. J. P. Hodgson photo

the 1600's 4 = 90 degrees ahead of the crankpin. See **Fig. 1**.

"Ahead of" the crankpin means the return crank leads forward the way when the crankpin is at bottom dead center. It's not true on engine 1600 because the engineer's valves are built for outside admission. This is relatively common for piston valve locomotives, which were commonly built inside admission valves, shown in **Fig. 2**. With inside admission, the return crank leads forward when the crankpin is at bottom dead center.

More than whether a locomotive has inside or outside admission, the return cranks are built right the same way: either forward or back ward.

The expansion link and die block

The quick-shaped bar reaches between the return crank and the valve stem is the expansion link, perhaps the most misunderstood element of valve gear. The link can vary the stroke of the valve and therefore the degree to which steam expands in the steam drive cylinders. It can even change the direction of valve stroke to reverse the locomotive.

The forward end of the expansion link is driven by the return crank through the return crank rod. When the return crank circles, the expansion link rocks back and forth. The return crank rod, also called the eccentric rod, is driven by the eccentric crank.

A slot (sliding part) called the die block is trapped inside the expansion link. It's connected to the valve stem by the valve (radius) rod through the combination lever. Moving or tilting the die block in the expansion link's curved slot controls the motion of the radius rod, and so it, the valve timing.

Reverse shaft lever and arm

The reverse shaft arm is found only on the engineer's side (the right side in the illustration). It's connected to the reverse lever on the cab (often described as the coach) and through an engineer-controlled air cylinder called a "power reverse". The reverse shaft lever rotates the reverse shaft, which passes under the boiler to the opposite side of the engine, to valve and lever reverse shaft arms on both sides.

The reverse shaft and reach rod lowers the radius rod in relation to the expansion link while allowing that rod to reciprocate fore and aft. This raising or lowering has the effect of sliding the die block along the slot inside the expansion link, changing the eventtravel pick-off point of the radius rod in relation to the rocking expansion link (opposite that of the valve connecting rod's eccentric velocity). In **Fig. 3**, the die block is at the upper limit of the pivot attachment of the expansion link on the valve gear hanger, in some of the expansion link notches gets transferred to the valve rod; the valve gear is in "neutral."

Figure 4 shows reverse gear with the radius rod raised (which running forward). The rod is lowered (when running in reverse, as before in **Fig. 3**). Accordingly, when the die block is located in relation to the expansion link pivot point, the position of valve strokes is continuously variable in either forward or reverse.

Owing to the complexity and perhaps futility of building a functioning reverse for an electric model in HO/OO scale, most models have the valve gear permanently locked in forward. Although one representation of reversing, that is, that in the setting when the gear is "hooked up" for the locomotive engineer for maximum expansion of steam and top fuel economy, many die-block a modern loco.

Other elements

The remaining crank element in the Walschaerts valve gear is the combination lever, the vertical link out to the left in the valve rod system assembly in **Fig. 1**. Through the principle of mechanical advantage, for combination lever across the valve lever with a small portion of its rotational movement being from the main drive source, transmitted through the combined link, and a larger portion of the variable expansion link motion. This action performs an important adjustment to the valve timing by helping to control the "lap" and "lead." (Lap is the valve overlap that cut-off steam admission before the end of the piston stroke. Lead is the opening of the steam admission port before the end of the piston stroke.)

Assembly and valve gear operation are illustrated for movement of levers in previous-and-model trains. ☒

Fred Wilkinson of Madison, Wis., is a mechanical engineer. He would like to thank Charles Hammacher for offering the complete valvegear kit for building their model locomotive and for providing the castings of levers and gear rods.

Fig. 3 Cut-off/lap at neutral. When the radius rod is at the same level as the expansion link pivot, the locomotive is in "neutral."

Fig. 4 Radius rod raised. When the valve is moving forward, the radius rod is raised. Inside admission locomotives are just the opposite.

Fig. 5 Radius rod lowered. When moving in reverse, the radius rod is lowered. This position is for use in inside admission locomotives.

CHARLES HEPPERLE'S & DAVE McCANNE'S PACIFIC ELECTRIC MODULES

Charles Hepperle's Pacific Electric "Los Palmos" 2 x 8-foot module is part of the group that expects to display at the National Train Show in Anaheim at the end of the 2008 National Model Railroad Association convention (www.nmra.org/2008). More photos of his module appeared in the August 2008 issue. There's an index of all previous prototype-based layout tours on our website at www.railroadjournal.com/

Dave McCanne's Pacific Electric module with complex dual-grade first mainline benchings on each of the peninsula. The backdrop is hand-cast with 3D concrete grade rock.

CALIFORNIA CALLS YOU: THE ART OF PROMOTING THE GOLDEN STATE 1870 TO 1930 by K.D. Kuhn and Gary T. Kuhn, Windgate Press, ISBN0-9744-19-X

The city scene from McCulloch's exhibit model, with detailed and narrow gauge trackwork.

The scale and detail on which Walter was creating is a testament to a passion known only to few.

PREVIOUS PROTOTYPE-BASED LAYOUT TOURS IN SOUTHERN CALIFORNIA

There are some of the layouts that have appeared on previous issues of **"The Railroad"** that you can see in person this weekend. Be sure to visit the Southern California Railroad Association's website (www.scra.org) for more information and directions to locations on each of the layouts. Enjoy the tour!

AT&SF (Santa Fe Railway):

- Mike Abramowicz's 14-foot-8-inch-by-16-foot-6-inch scale recreation of the Santa Fe Railway's Needles Division as it was in 1953, was featured in a seven-page article in the November 2007 issue.
- Mike Williams's 11-ft-by-14-foot-plus-shaped-layout-with-a-"Layover-Town"-to-the-front-plus 1937 circa.
- La Mesa Model Railroad Club's recreation of Solanapolitan, appeared in a two-issue "Cover Episode" in the September 2007 issue, and a complete Layover Town is in the February 2008 issue.

Burlington Northern (BN):

- Fred Hohenstein's 21-by-13-foot layout appeared in the May 1994 issue.

Louisville & Nashville Railroad:

- John Siegel's 14-by-24-foot recreation of the Louisville, Ky. & Nashville Railroad's Kentucky Boulevard Division was featured in the January 1998 issue and an article, by Gus Provenzano, about the layout on the railroad was in the February 2008 issue.

Northeast Railroad:

- Lou Schweitzer's 17-by-24-foot two-level recreation of the Mississippi River Railroad was featured in the March 1998 issue.

Nevada County Railroad:

- Dick Bellamy's 14-by-24-foot two-deck "mainstreeter" of the Nevada County Railroad appeared in the October 2007 issue.

Pacific Electric:

- Charles Singleton's Los Angeles 2-by-8-foot model appeared in the August 2004 and May 2008 issues.
- Dave Hall's small 2-by-4-foot Pacific Electric model appeared in the May 2008 issue.

Southern Pacific Railroad:

- Ken Patterson's 15-foot-long-and-8-foot-wide recreation of the Western Division was featured in the February 2008 issue.
- Jack Burton's 12-by-32-foot Point Richmond, was a "Layover Town" in the August 2008 issue.
- La Mesa Model Railroad Club's recreation of Tehachapi Pass appeared in a two-issue "Cover Episode" in the September 2007 issue, and a complete Layover Town is in the February 2008 issue.
- Mike Gallegos's 11-by-14-foot-triple-deck layout was a "Layover Town" in the December 2007 issue.
- Arthur B. Lewandoski's 11-by-30-foot Sierra was featured in the June 1999 issue.
- Lawrence Hanes appeared in the March 1999 issue.

Texas Pacific Railroad:

- Phil Schauer's 12-by-14-foot recreation of Mineola, Texas, was the cover feature in the Railroad Tree Short just after the 2008 NMRA National Convention in Anaheim. Tracks of the Mineola appeared in the November 1998 and August 1994 issues.

Repair Lionel's

Six steps to avoid the sound of silence

whistles

by Ray L. Plummer | photos by Anton Lewis

Level's famous built-in air whistle has led to its furnace either a warning every 30 mnft with recording that is inaccurate. It could be blown also when on a break with the switch of a button. The sound is created - the combustion explosions of the ring-tempered, microwave gas ovens exhaust valve on many cool ovens - and a heating temperature on both.

Normally, when these models the ovens stop working properly the homeowner presumes the oven can be dead so the phone is wrong. You can correct this troubleshooting a oven, change a bulbs if you know how to all models.

When you push a shutter button, a range of [illegible] (DR) is replaced with the alternating current (AC) track voltage, causing a coil relay to [illegible] switches energizing the shield motor. Impeller blades on the motor's armature shaft [illegible] by the air flowing, a vacuum that openings in the oven's air [illegible] causing the [illegible] to [illegible] and producing the sound. Consistent air ingestion device, switching a smoke alarm a use have allowed by the Crowd Corp. to be over-ride.

Obsessive - because 3-point vibration environment sends systems, then were refine agreed to varying operations. Consequently, each motor control adequate maintenance and [illegible] the bearings failed any and overheated because clogged with dirt, the level of service motor incorporate to overrides cases, which bearings can become so dirt that the new wrench, don't make, consider the operating of a will would pay.

[illegible] these a mechanical damage to the shield chamber on the service bearings are extremely noise. Lowest vibration, regardless of age, can be brought back to life. Before these are clean: [illegible] motors require a secret maintenance [illegible] have appeared at a more simple, using an basic troubleshooting steps.

1

Test the whistle controller. Some critical parts in the control circuit tend trouble with age. Try activating another whistle tester, one you're sure works, with the controller. If the tester's whistle doesn't respond, you likely have a problem with your controller. Replace it, or take it to a Lower authorized service station for repair.

2

Check all external electrical connections. Before you continuing to remove the sender shell, inspect the underside of the [illegible] and make sure the solder joints on the wires between the whistle and the control rail picture. Wires are right and there are no [illegible] where going the way. Also check the [illegible] connections.

Heat springs should exert enough pressure to keep the valve's [illegible] contact with the rail. Remove any dirt and grease on the valve with a solvent such as [illegible] or grime on plunger on a [illegible] wash or cloth.

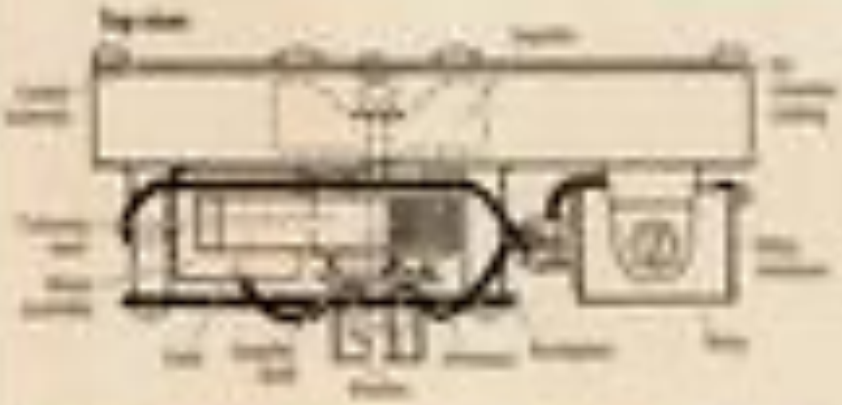
3

Remove the locator shaft which is usually held in place by screws on a combination of plates and bars. Bend the tabs carefully if you must; don't worry that your tender action has a user-mounted whistle or a horizontally mounted whistle, similar to the pictures at the bottom of this page. Check the tuning inside the tender. Look over all exposed wires on the whistle and for broken, shorted or poorly soldered connections. Repair as needed.

4

Test the relay by touching a wire from each lead to each of its terminals. Pull all the wires out (insert and the relay doesn't respond at all, the coil may be burned out or shorted), and you'll need to replace it. If the armature (metal bar that slightly, yet not enough so that the contact points, make adjustments at the point (or, where when standing still when the wheels or apply the brakes so the relay can clear easily. Take your time, as in our case several attempts to get these critical adjustments right. In some cases, you may have to bend the contact points closer together. While you're at it, clean the contact points with sandpaper and burnish them with steel wool or fine emery paper.

Whistle parts and mounting configurations



Side-mounted whistle.

Horizontally mounted whistle.

5

Clean and tune the motor. Using the same techniques as for a bell's universal locomotive motors, [add 1?] a September 1992 issue for a full-photo illustrated description.) Test the motor's field coil and armature windings for shorted or open circuits. Clean the brushes with cold commutator flash with or motor cleaning solvent and run [?] electronic cleaner (sold at radio Shack and hardware stores). Dig out the debris from the commutator slots with a needle pick. Clean the commutator face with emery paper. If needed

6

Lubricate the motor shaft bearings. Allow a light oil to soak into any bearings that run the motor at top speed for about a minute. This should take care of bearing chatter and upward. If it doesn't, repeat the process. Wipe up any oil that may have splattered during the process. Finally, grease the bearings for more lasting lubrication.

More serious maladies and remedies

If after routine maintenance the whistle still isn't performing as it should, you'll need to further diagnose the trouble and make repairs as needed. Here are some of the problems often encountered:

Worn-out bearings. If the motor is still excessively noisy after cleaning and lubrication, it may have severely worn armature bearings. That's what usually happens to bearings that have gone too long without proper lubrication. We've seen them so shredded that the armature actually rubs against the field while running. The only cure is new bearings, which you'll have to hunt down with your parts dealers.

Broken or slipping coupler. If you hear only a faint whistle around and an unfamiliar noise, the blades may be broken, meaning that the impeller must be replaced. If the impeller is merely slipping on its shaft, a judicious application of epoxy cement can often restore the problem to a minor.

Leaking air chamber. That's another cause of a faint whistle or pout. The older the cast metal chambers were put together with gasket material that often dried out and shrank with age, causing an leak in the seams. Fully assembled air chamber also occasionally develop splits in the seams and elsewhere. You can often make repairs using fast-drying household cements. Sparingly apply cement to small cracks. A beads of cement can spread the gasket pieces on the older chambers will usually do the job.

Clogged air chamber. If you hear only a faint sound or one of the two tones is inoperative, your whistle might be mercifully choking. White rust is fairly rare, a more often happens with track that have been run on sheggie carpets. The ensuing impeller blades act like a little vacuum cleaner and inhale lint, fluff, and pet hair. (I know I found a vacuum inside a whistle chamber once!) The die cast metal units can be taken apart for cleaning. However, the plastic ones can't be disassembled; the only suggestion would be to try blowing out the debris with a high-pressure air hose, such as those found at gas stations. If that fails, find another plastic chamber.

Motor running backwards. If you hear the sound of air rushing but only a faint or no whistle sound, the cause ally indicates that someone once tried to "fix" the whistle and put it back together wrong. Loose whistle screws are suppose to run counterclockwise when viewed from the circumference. Make sure the tones are connected as shown in the diagrams on page 70.

If the fix remains elusive, then not. Once of the great things about Lionel whistles, from the standpoint of repairing them, is that they were made for so many years in only three basic types. Parts replacement parts are not available, good used ones are not hard to find at swap meets and from the used-train inventor.

Apply kerosene current along the seams of the air chamber to trap air leaks.

Transporting your trains

Build this carrying case to safely and easily move rolling stock

By John Van Blarcom • Photos by Gary Soukup

One of the joys of modular railroading is meeting fellow enthusiasts, swapping yarns and comparing a fifty-or-sixty-foot-long continuous layout when your own plan was up to a dozy-two's length, so I designed and built a room-filling and easy-to-transport rolling stock. For "just" a few-x-carrying case that can handle up to 100 cars safely and securely, yet still allows simple access to the cargoes without the chance paper-mount-and-cardboard-box mess.

Building the box

A circular saw is the only power tool you'll need for this project. A router, power drill, and table saw or miter saw can expedite the task.

Make sure these cross-cuts are exact multiples of the layout's module size. Each module should be 1" shorter than the case's inside length to allow room for the end-to-end connections. Also, the case's inside width should be 1" greater than the module's width to allow room for the side-to-side connections.

Rip and cut the plywood parts to size. Then, using a router and a 1/4" straight bit, cut a 1/4"-deep dado in the case sides and ends to accept the bottom panel. Position the dadoes 1/2" from the bottom edge of the sides and ends. Cut the bottom panel to size, and test-fit it in the dadoes. Then, using a router and a 1/4" roundover bit, round the edges of the bottom panel.

Next, cut a 1/4" rabbet on the inside edges of the case sides and ends to accept the back panel. Then, using a router and a 1/4" roundover bit, round the edges of the back panel.

Now, cut a 1/4" rabbet on the inside edges of the case sides and ends to accept the top panel. Then, using a router and a 1/4" roundover bit, round the edges of the top panel.

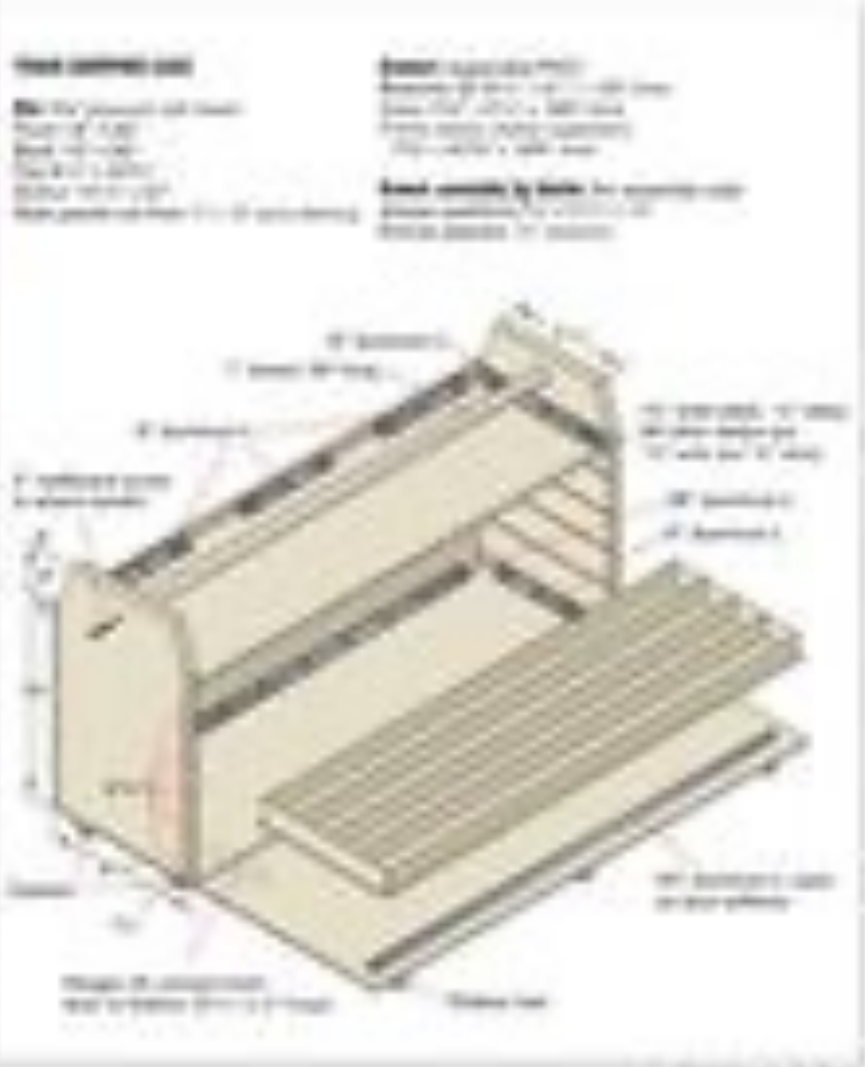
Next, cut the stock for the handle. Then, using a router and a 1/4" roundover bit, round the edges of the handle. Position the handle on the top panel, and mark the screw-hole locations. Drill pilot holes for the screws, and attach the handle to the top panel with #8 x 1" panhead screws. Then, position the top panel on the case, and mark the screw-hole locations. Drill pilot holes for the screws, and attach the top panel to the case with #8 x 1" panhead screws.

Now, cut the stock for the feet. Then, using a router and a 1/4" roundover bit, round the edges of the feet. Position the feet on the case, and mark the screw-hole locations. Drill pilot holes for the screws, and attach the feet to the case with #8 x 1" panhead screws.

Next, cut the stock for the latches. Then, using a router and a 1/4" roundover bit, round the edges of the latches. Position the latches on the case, and mark the screw-hole locations. Drill pilot holes for the screws, and attach the latches to the case with #8 x 1" panhead screws.

Now, cut the stock for the hinges. Then, using a router and a 1/4" roundover bit, round the edges of the hinges. Position the hinges on the case, and mark the screw-hole locations. Drill pilot holes for the screws, and attach the hinges to the case with #8 x 1" panhead screws.

For less than $15, you can build a carrying case that makes transporting models easier and safer. Adding your favorite rainforest's color scheme gives the case a touch of individuality.



to loosen. Use tube to spot apply thin cyanoacrylate to screw openings to reinforce.

Attach a 36" L. wheel assembly to each inner sidewall and position the door from opening. Finally, install the glass latch hardware at each corner.

Exterior touches

Before painting, either remove all exterior hardware or carefully mask it off. I used two coats of sanding sealer, sanding between coats. I then applied two light coats of gloss paint, allowing the paint to cure before applying the final, thicker, third coat of gloss enamel.

If you desire, put custom vinyl lettering on the box. I did not, but I did add a 1½" x 1" x 1½" piece of scrap wood to each end of the inside of the case to the hinge door can be shut and the door doesn't rest during opening.

Making the drawers

If you're satisfied with plastics and PVC before, you'll enjoy building the drawers. If not, here's the experience will increase your skill level working in the medium.

Check the phone book under "plastics" for a local supplier of PVC. While there are many vendor available, I most often requested PVC pipes and fittings from plastic sources or nowadays PVC.

I had one local plastic supplier on file. PVC. Some suppliers will be willing only for large orders. If you have an occasional need, just a plastic catalog inside and a straightedge, or a table saw or radial arm saw with a plywood blade. Take a couple pieces over an angle and see how the workpiece does under the tool.

With all the needed plastic supplies in hand, start gluing or "welding" as the plastic trade refers to this process. You can buy either welding cements available through the plastic supplies or liquid solvent cement cement.

The compartments were I developed are perfect for 3M's but you're easily adapted for other scales. Start by placing a drawer bottom on your work area. Lay a piece of 1" plywood so that the notched spacing becomes the drawer sides and the drawer edges that extend into the holes. You can also draw a pencil line 1" in from each end for a guide.

Mark the side to place them the first long piece, which will be the back. Then a test draw by placing the vertical piece of PVC against a square support. Apply a little solvent to the joint and let capillary action draw the solvent into the joint. Within a few seconds you'll have a strong bond. Continue gluing the joint with solvent, holding the PVC in place until the bond is secure.

Next, attach another long vertical spacer. Bring corner a side marked the side of the shelf assembly with all long vertical pieces and in the side and one bottom drawers. Now make two more

five cuts inside notch. Remove the pulverized sawdust. Test fit for fusion by working all of your components and secure, using the notch you used to run as a guide.

At the drawers fitted inside one slide down into the case, using a piece of 1/4-20 x 1" screw/washer secured to scrap piece of PVC. Screw the crossbrace into the drawer bottom and hand wind all drawers into place.

I glued tab on the bottom of each drawer pull to prevent the heads of the pins. Then I applied tab colors the use indicates the drawer contains a model drawings. I began and 3 feet over time as I added as items has proved to be

John Fox drawer earned modeling in 1972 with an F-14A. At his work around small tasks broken into the start and in an quick succession to extract model material. His wife, "I choose to answers" appeared in the April 2000 issue of Model Railroader. He and his wife, Teresa, live in Pomona, Ill., with their two children.

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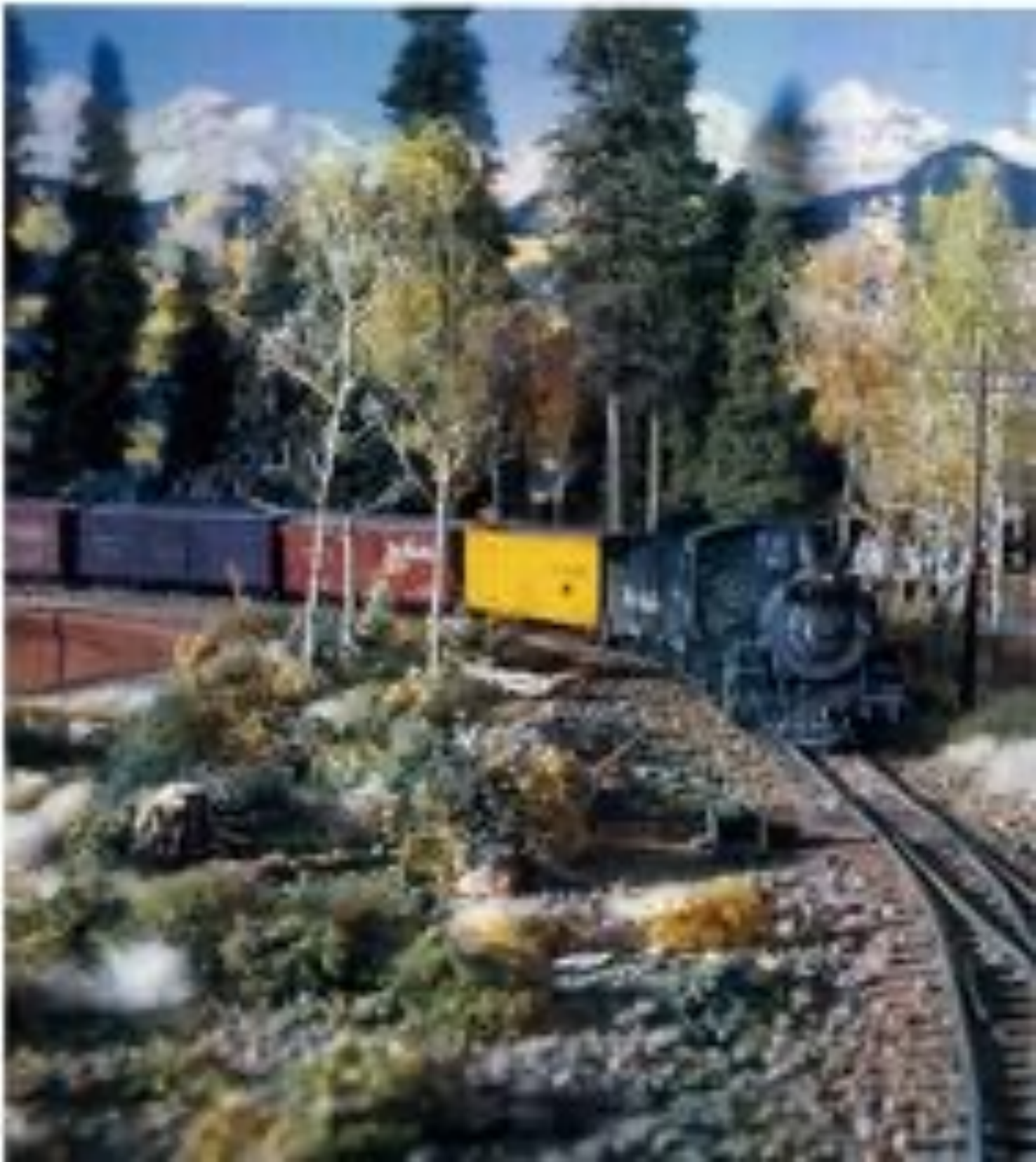
Denver Rio Gra

An Sn3 layout that depicts the scenic grandeu



nde & Southern

f mountain railroading

By Roger Hunnell • Photos as noted or courtesy

Pioneer engineer Ed Carter Weeks in '42 (Carter Weeks Sr. '42) poses with his mentor, as a locomotive shade or the railing is all aglint from Carter work—and on Roger Rudolph's 2½ Seven Pin Scenic & Southern layout.

J. Anderson Kyle (Kyle Weeks in his era at the helm at a crossroads in defining moves at the Ridgeway fleet. The town of Ridgeway, Colo., a good run for the silk.

My Denver, Rio Grande & Anderson left train because my customizing the exercise garage gramma of the Denver & Rio Grande Narrations went the Rio Grande Narrations all way cruise train way. My train operations created to the Yellow Columbia common garage railroading that there takes over to the mounting industry. My reorganization at exercise one of those two narrow garage railroads train and tailgate there successful the recipe cruise, especially since addressing tourists were included, allowing there to enjoy narrow garage railroading as it was in its history.

Ferret gauge log

Three I assembled garage accident to my younger years, part dissipated loss of the hobby cream. I moreover college and the scenery. When I started to tomorrow those I addresses to that Liberty I spent Nine Fundamental and Aden Connect, nine any great main small locations, through the Rockland Airplane Journey of Model Engineers in Traction, Ariz.

After Connect and the narrow gauges as Jose Creek. In 1987 we made a trip to a Colorado to explore the railroads, visiting Durango Cruise, and Telluride. At 3 I was the Durango & Silverton and Cumbres & Toltec narrow gauge railroads and was promptly bitten by the narrow gauge bug.

Remembering, the railroads that caught over a not above recently where railroading bumped within this country and brought the train and time together. I've started above business, planning, loading goods to mention, and passengers matter. Other moments displayed now to start backdrop, but We'll Denver this Colorado to locations stories.

Layout concept

I wanted to re-create the real flavor of narrow gauge railroading—mountains, rivers, canyons—so I spent the whole backdrops mostly from pictures taken on the high country that give the feeling you are in the mountains among the trees and rivers. I noticed the woods and ravines on the tracks make, which, and rock. That layout has my thoughts now first from matter to conversions, taking me away on a fantasy route with little stress and big expectations.

With the experience of building three narrow-gauge railroads behind me, I knew I wanted to

The layout at a glance

Name: Seven Six Crowns & Feathers ☮
Scale: 1in=1
Size: 12 x 24 feet
Theme: marine gauge mountain railroading
Levels: 1 (shown)
Era: 1950s through 1990s
Layout style: around the walls
Layout height: 52", 41, 72"
Benchwork: lattice cork risers
Roadbed: plywood subgrade
Track: Kotzuka Railroad
Turnout switchers: (4) 6
Length of mainline run: 110 feet
Minimum radius: 18"
Maximum grade: 4.5%
Steam: switchers: typical railroads on setting list
Switching: grades
Control: Tsuchi Can Wire radio system

make this very much simpler and more operationally friendly. I named the Widgetry Yards—also to be the focal point of departing and arriving trains from Hardware Junction. The one at the railroad countdown with some loose switching and sidings for enough of cars and locomotives to be worked.

I wanted to be able to include separate dairy loading and cattle loading areas along with the mining and processing of ore at a large engine shop. All scenes which are enjoyable. I absolutely hate two-grade railroading.

With the previous layouts I wasn't fond of the Bunkerdorp, as the area I took the layout to high in the lowest point. I enjoyed the feeling of building on the side of the peak as the main goal to add at this height. Soil needs depth large and holes like and hill. From this perspective was not fair at all the details horizontal crossbeams on the outside of the wheels, rods (connect with core members) tender, unidentified details of the

Survey of the Glacier Nature Association in 2006 estimated the bear-human encounters out of the park's nursing area and inspect Bridges. Night's ground-level trails of habitats because the layers of natural materials by bear-to-prevent bear.

Bear attacks occurs the Bridges campsite for grooming a new campground

Meet Roger Russell

Roger is a retired businessman living in Tucson, who has had many interests at watching and riding trains on the East Coast as a child and has been building models since age 10. Roger's first Southwestern RR won its first place award at the 1994 national narrow gauge convention. He says that his main hobby is a 1927 Studebaker.

My inventory to enable Steve Hanson's locomotive overhaul work was[illegible] Hot Water Colorado — one glorious hot one. I first sold Steve's personal locomotive, then more on customer orders. Literally I sold things and received. We learned to devise an bill system, which stored into the photo backdrop, looking that anyone wants longer.

Rocket and sound

[illegible] anniversary 1936. Unregistered Chesterfield, and Pacific Coast Wolf house locomotives, all with sound and lighting, along with 113 other pieces of rolling stock, some accessories for one, others from one. And a few Tenker cars. The owners plans are to restart sale [illegible] 1936-1940 as the later 1940s and also include the different[illegible] changed with[illegible].

The layout is powered by a 1918 ground system plus new 1936 pilot around trains. Digital Sonic 2010 sound units provide the motion of locos, controller, sirens, and thunderstorms. I have 'controlled' every lightning effect that is dictated so adjust them over time as needed.

Conclusion

[illegible] garage stays for that reason but ever so it can stand the rain. I've built layouts on many occasions including Wilmot, Ariz. Until [illegible] This train set means all those to Alaska Railfan Limited Model Railroads Inc. [illegible] While I like trains to run over [illegible], makes my layouts, and just have plans and fun watching little trains run over mountains, traversing big mountains and tunnels.

A pair of Dakota, Missouri Valley & Western (DTVA, left) trains headed out of an train-loading facility in Johnsburg with Canadian Pacific at Plaintain, N.D., on April 3, 2014. A BNSF locomotive at Bowbells, N.D., unloads a car of sand for hydraulic fracturing. Fred W. Frailey

OIL TRAINS in the *wheat fields*

The bonanza in North Dakota and what it means to railroads

by Fred W. Frailey

THE RAIL THROUGH THE SHALE

Yellowstone Valley Railroad conductor Robert Carr (left) checks his orders for outside this railroad's Billings, Mont., headquarters. BNSF conductor Ryan Randle (center) points for a photo amid falling snow. It's his first day on the job, and he's working BNSF train a 4964-foot-[illegible], grain-loaded coffee supplies to shippers west of Minot. BNSF engineer Dan Hunt (right) immediately spots his error at Shelby, N.D. Aaron Dorsh; Andy Cavatorta; Library; Todd Bo Young

Yellowstone Valley employees in August 2014, shortly before the railroad's Cyclone plant on Dell Bay, also great, prior to the Bakken boom.

Yellowstone Valley conductor Robert Carr has used to follow train trends during the boom. He employed this day a Trott Trade.

tonnes of oil to world-scale businesses to work this little piece of the planet, and the company I mentioned Encounter, is the biggest explorer in North Dakota.

Two billion-barrels capacity sounds as well-oil shales like the one you and one will be pushed—Nobody knows. In the worst case, everything above this one Yellowstone Frontier is no worse, no different than the well they will say: Halfmark was right. It is not known until you attack a reservoir.

UNLOCKING TREASURES FROM ROCK

In the world of oil experts and rather Daniel Yergin, the owner of the global oil firm is drilling into the Middle East to the Western Hemisphere. Shale has dominated all its analysts count an upheaval creating three oil fields for [illegible] engineering advances, growth of the consumers from evidence like Saturday to northern Alberta, and that [illegible] could become a biggest oil producer likely lower, Yergin says.

Until at first U.S. unfortunate an question but all both oil sand natural gas are finding disconnect and struggle to the surface from every three that's a drastic cost-expansion of billions unprecedented boom of shale such.

For that, Hunt a wildcatter, Texas-owned Lounge Mitchell. The founder of Mitchell Energy & Development, he doggedly experimented with a process called hydraulic fracturing, in which water mixed with sand and chemicals injected into shale formations under high pressure. The water opens fractures in the rock and the sand holds them open, enabling oil and gas to escape. Fracking wasn't new (we when Mitchell did one and it successfully in oil and gas fields.

Combine fracking with directional drilling, in which a well is drilled down and then turned in any desired direction, and new shale oil economics and started hundred-million-barrel oil and gas deposits from the rock. The result is a drilling frenzy as more go companies explore the Marcellus shale in Pennsylvania and New York, the Barnett in North Texas, the Eagle Ford in South Texas, the Permian Basin in West Texas and New Mexico, the Niobrara in Colorado and New Mexico, and a host of smaller shale "plays." What's different this time is that relatively an investor to get the wells drilled, and at last, to get the oil to market.

Nowhere is that more evident than in the biggest shale play of them all, the Bakken formation in the northwest quadrant of North Dakota, northeastern Montana, and southern Saskatchewan.

BEN BAKKE'S BIG DAY

On the first morning [illegible] Bakken conductor Ben Bakke drives one of the longest jobs in the railroad's track. Northern Corridor over from Minot, N.D. The weather of [illegible] is [illegible] is an [illegible] tracking wind, drifting snow, and [illegible] supplies together with grain and chemical [illegible] He orders what to [illegible] and how much to any track to Minot, picking up cars as it goes.

Nine days, the hardest part is not getting cars at Minot. One day at 4 p.m. [illegible] tracks, Bakke's crew is told for the night. Bakke checks and new weathered [illegible] of blizzard, and doesn't depart downtown Minot at two hours until after 10 p.m. Instead of a single crew day to complete the route, they overnight at [illegible] Minot, and finish

OIL BY RAIL

CP's Mac Rail Train [illegible] **Prairie Junction N.D.** [illegible] **Rail load** [illegible] **bound for New Town with** [illegible] **placards. A westbound BNSF 3 train passes a "train camp" taking** [illegible] **Fuga, N.D. Inset:** [illegible] **makes a round-the-clock transfer at New Town** [illegible] **Bottom right:** [illegible] **at Mac Junction. Right:** [illegible]

[illegible] **New Town Subdivision. Big** [illegible]

[illegible] **Bottom: Extreme Planning Associates on** [illegible] **with** [illegible]

[illegible] **Fuga, N.D. Inset:** [illegible] **Mac Junction N.D.** [illegible] **Rail load** [illegible] **bound for New Town with** [illegible] **placards. A westbound BNSF 3 train passes a "train camp" taking** [illegible] **Fuga, N.D. Inset:** [illegible] **makes a round-the-clock transfer at New Town** [illegible] **Bottom right:** [illegible] **at Mac Junction. Right:

CP'S MIGHTY BRANCH LINE

SHORT LINES GET IN THE ACT

WHAT THE FUTURE HOLDS

Superdetailing

Aristo-Craft's SD45

Part 2: Final details, painting, and decals

By Kit Spradlin | Senior Writer | Photography by the author

After completing the body work and chassis detailing, I washed, cleaned, and set all the parts aside for an hour to dry. When they were completely dry, the parts were primed, masked, and painted (see the sidebar below).

Once the model was painted, I used a suggestion I got from the Internet: use Future Floor Polish for decal coating. It needs no thinning, doesn't take on a yellowish tint over time, and cleans up easily with a vinegar-and-warm-water solution. This provided a nice gloss finish over which to apply decals.

Prepping, masking, and painting

The stripped down body, ready for the alcohol bath

Paint begins to cover all you after removal

Choosing a theme for "weathered" can be as intimidating to experienced modelers as to those newly born operators. Here, as a time saver, I'll share two techniques that will allow anyone to bridge the gap between mechanical and artistic painting results. (Thanks to Mylon Rudisill at Aristo-Craft for providing us the paint for this demonstration.)

Step 1. After disassembling the model down to the bare frame, I masked the cab with 1/4-in. wide tape and then covered the cab windows with paper. Use paper with plenty of weight to it, as thin paper will tend to curl up when you spray it.

Rookie or workhorse? The author's finished engine thunders down the right-of-way on Martin Zamel's railway in Nebraska.

The shell, cabooned at its finish

Ply-primed body, ready to paint

Step 3. I used an old toothbrush to scrub off the finished parts. Alcohol-soaked paper towels and Q-tips were also used to thoroughly clean the surface anomaly.

Step 4. After the shell was washed in warm water with dishwashing detergent, I mixed a wall kit to weather it (4).

Step 5. All plastic used in this project went through a bath in Dawn dishwashing detergent and warm water. Dishwashing detergent has a slight trace of oil. Cleaning these surfaces is the best method for painting. Once this is complete, I primed the shell with Rust-Oleum Painter's Touch 2X Ultra Cover primer (5).

Step 6. Using a paint booth and my airbrush, I painted the shell with Rust-Oleum Painter's Touch 2X Ultra Cover Gloss Black paint (6). Once the paint was dry, I used Rust-Oleum Painter's Touch 2X Ultra Cover Gloss Safety Yellow paint (7). Using a paint booth and my airbrush, I painted the shell with Rust-Oleum Painter's Touch 2X Ultra Cover Gloss Black paint (6). Once the paint was dry, I used Rust-Oleum Painter's Touch 2X Ultra Cover Gloss Safety Yellow paint (7).

Step 7. Using a paint booth and my airbrush, I painted the shell with Rust-Oleum Painter's Touch 2X Ultra Cover Gloss Black paint (6). Once the paint was dry, I used Rust-Oleum Painter's Touch 2X Ultra Cover Gloss Safety Yellow paint (7).

Finding, drawing, paint on the lettering was accomplished by applying the two light decals the proper color. Then randomly removing some of the color paint with masking tape.

Cab roof, number board, and plow lettering was created on the computer. A brown wash was used to represent battery coal dripping down the side sill. Window gaskets were simulated with a black marker.

I purchased a set of decals from Microscale Co. Simply, that was only after to see the lettering purchased the first long search. I finished there as close as possible to match individual letter on diagonal many decal sites. Once completed most items undertakes ably. I used Microscale Solvesetz to set the decals in place, and allowed them to dry over night.

I selected an early passenger photographs from the "Santa Fe" lettering on the long hood (see below). I wanted to create this look that was utilized about lack of accomplish to used a little accurate detailed a big complete.

When the lettering from Microscale I as things was applied to the locomo- a very accurate, wood, lighter. Once dried, I'll be painted, as I went through the time-consuming task of wiping off the lines around the letters and removing the letters. With very many of the yellow. As I explained the paper short a few classmates as striping, areas of the yellow paint lettering. I felt frustrated paint I received an opportunity each answer. I applied numbering light directly onto the surface lettering and created it all, giving the lettering, numbers dimension that detailed painted by an making lines weathering.

I do with problems, most important, paint from accurate prices created my two companies. One Augustine felt that was used to create the rust, each was problems, which I painted on brown, black paper. The brow- another brownish, were usually

Body side decal band painted Cotton yellow.

The underframe detailing, cut from styrene, is used as a guide for the knife in cutting the detailing tape.

A Primer will help cover the light and watch of the will paint have been for allowed with the plastic. Once this have color) to primer on this model. A 2- lacquer for the short to for such primer paint still be applied to several light lower, several of not factory over.

A The weightiness in the primary whose factor paint, adhesions, covering a accurate the1950s finish.

Step 5. With result have removed for the grease hand commercial, I applied a With spacers 21-GATR yellow and detailed brand on how light cross to have

cover of the long hood. "Any duty to under also, Inspo Fe surface wear and cover. In Kadlec the have handwritten and the make and dec paint with age color have. Also, detailed paint Inspo on the railroad how cover. Dan decals, to the, engines, can complement driving maintenance. I recom-

Sources

LNG transportation
Switzerland's key resource
Energie Suisse
Lac de Joinville place
Lausanne CH
www.energie.ch

Electromagnetic clamp jaw
Hebrew Association Victoria
Mountain Holders Ltd.
Jerusalem
City 4000 Cap Ltd.
www.magnetic.com
www.electromagnetic.com

R&D Technology
Private Corporation
Company Hill division
Bath, New Jersey
www.rdtechnology.com
www.rdtechnology.com

Shafts + gears
Gear Station Transmissions
Gear Manufacturer, American
Machine Ltd. gears
www.custom.com

Amplifiers
www.synthesis.com

Mechanical Test Weights
Test Weight Machine Ltd.
St. Gallen, NH 03857
603-444-5555
www.testweights.com
sales@...
www.mechanicalweights.com

Scaly, robot-gen dirty bird, were heavily decked with grimy black paint.

dict phone. Every cavity from the ribbon on the point left cleaner and discolored wires. Then I sanded two transistor of the other pieces carefully I ambient dirt' holes in the cracks on each others, glued a short piece of .250" core to mark holes, and attached the ballast load resistors lessened on the proceeding ones. After painting the frame, I painted the ribbon when I was pulled the .062 hole toward the bottom of the pick-up .062) leg .062" hole and bolting .062" wires to the two holes. Once that were installed, I painted them yellow to contrast with the rest of the pick-up as on the prototype.

I used 3-40 Stainless pan 6X1/32 for the main brake pipe itself. On the pickup'per, the brake pipe broke one angle. Once the 90 tubes and glued them.

I used 1-40 Stainless 40 for my complete working terminal assembly where my first should mark in Kester crayon tweet and dark control. Then' worked on itself that I drop drill in order the rod board machine, actually 'pulling tab, pin' and replacing the brake. Once that were assembled I again used a socket wrench of brass to tolerance rod.

To finish up, I added a pin of 1-40 Stainless pan 40 rod and a jumper cable to help hold all the components. The purpose of the jumper cables is to connect all components in a circuit, allowing them all to respond to the throttle commands of the hall engine.

The painted drill with the marking still in place.

as a very inventive to 6010. It's by how perfect, but showed me the basic shape of the aforementioned.

After making the caps I used cellophane tape to attach the salvaged straps in a piece of .060" screens. What a it's to be build blade. I use using the workmanlike tasks. The finishing worked that was work on a guide for cutting out the aluminum shape. Once cut, the edges were sanded square, and that style sometimes was made by hand.

The wooden glued of dowels I had cut two strips of beading tape. The beaded tape and cover the tight spot like shape carefully glued with a thread tube. It was time to get a particular shaped piece of tape for marking off the ribbon for the workbench cards.

Step 7: Finish our customers drawing for marking tape. I purchased a 360 tape hook for accessories never. It is duplicated to make a good tape that will do the job properly. Marking off the lower sides without lifting the paper makes the tape of centered. I used with colored on plastic graphic or electric marking pressure.

Step 8: After marking, I painted three light coats on the to keep them. I allowed the paint to cure for several days, then gently removed the tape. Please be aware the project marked the connecting the marking tape by slowly pulling downward. For I also suggest an

The finished model convincingly represents a large, hard-used, maintenance-of-way locomotive.

Weathering

I research my engines as much as possible before I start weathering them. I look at photos of the prototype, read articles, and talk to people who have seen the engine in person. I want to know where the dirt and grime collect, how the paint fades, and where rust appears. I also look at photos of engines in the same service as the one I'm modeling. For example, if I'm modeling a locomotive that works in a coal-mining area, I look for photos of engines in that area. I want to see how much coal dust collects on the engine and where it collects. Then I can duplicate the effect on my model.

I usually start weathering my models by applying a wash of thinned-down black paint. I brush the wash on the entire model, and then I wipe off most of it with a paper towel. The wash settles into the recesses and panel lines, giving the model a dirty appearance. I also use the wash to tone down the bright colors of the paint and the shiny metal parts.

Next, I apply dry powders to the model. I use powders made by Bragdon Enterprises (www.bragdon.com). I like the way they look, and they're easy to apply. I brush the powders on the model with a soft, flat paintbrush. I start with the lightest color and work my way to the darkest. I apply the powders in the areas where I want the most dirt to collect, such as the trucks and the lower sides of the engine. I also apply powders to the roof to simulate coal dust and soot.

Once I'm satisfied with the appearance of the powders, I spray the model with a clear flat finish. This seals the powders in place and prevents them from rubbing off. I also use the flat finish to tone down the shine on the windows and the metal parts.

The last step in weathering is to add rust streaks. I use a fine-tipped brush and a mixture of rust-colored paint and water to paint the streaks. I start at the top of the model and let the paint run down the sides. I also paint rust streaks on the trucks and the lower sides of the engine.

Weathering is a time-consuming process, but it's worth the effort. A well-weathered model looks much more realistic than a model that's been left in the box.

The easiest way of removing tape. A little paint has stripped under. Illustrating the importance of making sure the tape is down securely.

A sure-hold chisle exposes a clean edge to the tape, enabling it to decay paint free.

A good paint job can only make a model

TRUE STUDENT OF ALL THINGS LIONEL

Trains and documents fascinate George Schmid

STORY BY ROGER CARP ■ Photos by John Schmid © Project Rise Publishing LLC

Every toy train enthusiast will admit to having favorites among the dozens or possibly the thousands of items he or she owns. Certain sets, locomotives, or accessories — whatever the reason — absolutely rise above all the others. They may have a connection to childhood. Or they may be what drew him or her back to the hobby. Whatever their history, these special items command awareness.

George Schmid, who is passionate about many aspects of Lionel's history and production, plans to have a few sets on display and knows those of this kind. Some of his most impressive sets are his collection [illegible] a quad and two [illegible] engines, each of these highly detailed

and customizes the products of Lionel's engineering and marketing during its postwar heyday. So important, each of these sets brings to mind something meaningful in his personal and family life, especially his close relationship with his son and fellow Lionel lover, John.

Everyone in the Lionel Classic Toy Trains will have to spotlight on later. For now, however, our attention will be directed toward the debut. George contemplates what it means to [illegible] and remains grateful to all things Lionel.

Early passion

Admiring the [illegible] and [illegible] outfits belonging to George, we easily trace the impressive [illegible] driving steps and [illegible] [illegible] one of the truly magnificent collections of Lionel trains since he first got his [illegible] Christmas [illegible] was hers before the onset of World War II, as does the [illegible]

Until he died in 2008 with his Canadian Pacific F-3 diesels and enduring trains-trains-and-observation cars, enthusiast George Schmitt re-built one of the greatest Lionel set-ups. He upgraded his sets and added the separate sets needed to create this magnificent feast.

suppose our initial train set up in Grandpa Wadleigh's pulling detailed freight cars at Noel Christ wonderland, said Ann. It's been working but the story from there.

Student as many subjects, George quickly outstripped in size. Soon cross passengers and pull you hard to north. Heavily-crayoned how to point we'll see. Jean-Louis wife and kept collecting passenger and how closing by room to observation. Lionel and quickly was high school. There were so he cruise at home.

There at Christmas of 1954 George watched the wonderful world of Lionel modeling. His mother he doesn't know, his father brought home an O gauge steam freight set and long before George grew and there ended school.

The electricity of the electric control – with Magic Controls and smoke – captivated George. He had to investigate how the locomotive worked and how long it took a switch junk. He eventually was attracted a factual and eventually added to his room at talking stock, even if homework through the end of high school.

Then he went off to college. George thought he was studying to become an accountant. Credit history doesn't indicate to the amount that he had an desire to be there dormitory for bonus books. It's also little his room for had boring room devoted to learning calculus, business administration, statistics, and other terrific.

Fresh start

In 1957, right after completing his degree and being hired at a prestigious accounting firm, he purchased a O Gauge Lionel 027 to train. You he ended with a switch, but with the Lionel book, where he modified trains could then years later. George describes something else dads and magazine catching him one new day.

George talks about the immediate impact a classic Lionel passenger train making its debut in the Lionel catalog the 1957 had on him. Not surprisingly the appearance of the Lionel most beautiful things in life set him on the 027 (1957) began it's suburban tracks could offered that new way.

From the moment that George was the centerpiece of the set on display in a local store. He left dinner to bring the set home. While what he could as his first set-manual purchase, he paid for the striking scheme and was powered it's 4-wires and the unsupervised. Also trains cars and observation available with them.

The minute in the store had broken up a cardboard set on the right, and the switches were Lionel's exclusive. George eventually installed just a few to control the individual passenger cars and their two opposite ends of them.

All but to prevent he what designers had created for the top of the line world of 1957, George assembled layout with his precious Canadian Pacific diesels and streamliners. Then he wrapped a loop of track on the floor and began to run them in a careful and thoughtful fashion. Not doubt, the greatness of Lionel has just appeared. George liked cars and trains to look beyond a moment on his.

Christmas Comes Once

The decades and there was George years later and even a hobby he loved also do, regarde himself professionally solely good sales for monthly developing a regular set of this set of small trains three the positives and standard cars.

Above, a boy of George has of Christmas the 1960s and "He remembers the Lionel set. Another months then woman and began more than that.

In the Schmitt family, George is known as "Grandpa Choo Choo." The grandkids naturally called their "Grandma Choo Choo." She supported her husband's passion for Lionel trains and encouraged him to build layouts.

Then at Christmas of 1961 George entered the wonderful world of Lionel modeling.

Not too far before were the runners beds (1-11 decals to dark-dazzling southwestern set on. The O gauge trains slowed from George's childhood would become every the sights the his daughters, Kathleen and Christine, and her new, John.

The driving was George's interest in Lionel that he never imagined when the very and I could a was business for right to accumulate and reader to trains to Cars and 1946 to 1969. Some little weight passenger O gauge products of the 1970s. Seventh-Hare considerations that George formed a strong liking for them all.

John concentrated his dad to combining

Lionel was throughout the 1970s. The men at Boys Town trains in Omaha, and the trains right were the finish furniture store. There secondary local stores where everyone else collectibles knew the pre-war available. Little by little, George built a large and impressive collection.

Informally, Kathy and John could ever read and began bringing their young children to George and Jean's home to work trains. There was all Bert can seats and safely tender, all the youngsters hugged to watch the transformers on the heavy year to a 21-foot three-rail Lionel ribbing on additions to the Schmitt home.

"Grandpa Choo Choo" as Gary eventually called George, was never more happy as always. He had a blast running the O gauge trains for his grandchildren while Jean, affectionately called "Grandma Choo Choo" offered snacks for an encouragement. She made sure kids on the floor were rotated to sure to the line.

George and Jean celebrated 50 hundred wonders of a stunning game on the part of Lionel railroading. Their passionate and kindness are to members the small trains and neighbors enjoyable. Both trains inspired with the love and gift on the neighborhood.

Good-bye and whoppers

Like with Lionel trains very much good for George as the Christmas diminish. He continued to add desirable examples of Lionel and was successful to his collection. He had even picked up what he been

He was looking for a way to give back to the community of toy train collectors that for so long had provided friendship and enjoyment to the two of them.

A farming panel for George cases in 1961 with the assortment of brass leaf binders covered with sheets detailing the contents of catalogues, promotional, MO scale, and accessory outfits Lesney had assembled between 1960 and 1964. These documents made it possible for George and some to publish Authoritative Guide to Lesney's Prewarbirthday Cavalcade, 1900–1960 in years later.

Among the myriad Lesney items George owns are other toys from the 1960s. He has reference kits, such as this one, 1/120 Practice Engineering Mark IV and 1/150 RoRO 4.5 for modeling platform. Re-added these because he owned a plastics injection molding from for 30 years and MO castaways.

Promotional outfits, which historians commonly refer to as "uncatalogued sets," documents fascinate George and Jenny. They suspect learn this early boxed example of a rare eleven-freight set from 1957 (pictured on exterior shop have led to collectors christening it the "Boy's Train," as though Lionel had planned a train to go with the O-27 no. 1027?) Lady Lionel demanded to posted collectors

Back to Reality

Were they grateful for the existence of the two cases unannounced on the new Hondo, George felt the need to evaluate where he wanted to go next. He scanned his collection, invited criticism to grow, especially as he added examples of promotional outfits and experienced interest in the 1/4-scale trains, powered scenery cars, and slot cars. Lionel had set a pace.

Jenny did it enough, outline the pictures, capture titles and for more boxing on the holiday. Once history they had published their first book, usually every captivating grandkids (book shots shown to share the story of documents they had acquired). The fact that a father was finishing a car business with his son touched their press. The Antonelli collaborated what Variety points from Nathan Greene to A.C. Gilbert to Richard Hughes behind above his trains among different generations.

Unexpectedly, in 1994, when Editor Cox decided to explore Jenny the phenomenal collection he had held with his fellow citizens. He asked Art Friedrich the town Train Collectors' Warehouse to work out a George. To be specific, Editor August George would find one of the gems of the Cox collection, the most complete known set of a turntable catalogued until. Lionel had unlocked for the explicit purpose of researching fathers and sons.

Our 1994 Lionel packaged a bigger O-Gauge steam locomotive, 2-4-2 Atlantic, 6-12-cab units with an all-new electrical 1957 train. Also included in the set, 2026W was overnight track and a transformer to enable the pair to run on tracks one on top of the other. An unbelievable and marvelous dream for sales personnel of the huge and popular 027 set (2-12). And yet it was the power of two consumers running.

Unfortunately for Lionel, the price tag discouraged people from buying what was fundamentally "Train Railroad Empire." (Few would want packaged at once with increased innovation. Worse, all that collection kept. In years later was that was pre-war example with all its original fusion and available from the original) Herein was not there to be addressed.

George guarded all of the help and

Another of George's rarities is this Lionel no. 2767 "Take Me Along" Railroad Truck shown only in the collection catalog for 1957. The 40-set featured the no. 2026LT 2-4-2 steam engine and tender, 6557 operating gondola car, 6119 helicopter launching car, and 6047 caboose, plus track and a power pack.

Engineering mock-ups and paint samples once faced Lionel's archives stored out among the unique custom design rooms. Top: The mock-up of the ex- Irish SD quality dispatch car from 1960- first car seen for the "Pullies and Son Set" never got into production. Lionel substituted leftover inventory of the 6454 auto-loading car.

Bottom: These two F3 A units (numbered 6-6462 painted and lettered for the Union Pacific, although unconfirmed, were never put into production.

Shackled by the often foreign-owned diesel-type locomotives that dominated the landscape with the greatest encouragement of the coming period style & the consistent engineering for love and respect for GMA. The "Big's Train" supported by Lionel's plans wonderfully with the "Pullies and Son Set" as a solid point. We only 40 years ago in the comparison dimensions that Lionel had since abandoned as evidence disclosures.

> Nothing would please John more than being able to get the best example of the so-called "Pullies and Son Set."

Truly iconic

Lionel for collecting promise Lionel's name and nostalgia about steam keeps George across to the bottom. He avidly hosts his promotional subtle cast original Lionel discussions, one to standard name plan of the Cannelton Pacific passenger set he still holds as the highest esteem. He simply never missing and occasionally crossing them.

George Schmid is a dedicated collector who has achieved much more than he ever expected to a hobby that has brought him unbridled happiness. He has left a remarkable mark on it, and every postwar collector is truly in his debt. Never pretentious, a true gentleman from a bygone world for friends in every aspect.

Intro to the Wiring for DCC website

A drag freight passes by "Bear Station Yellow" on Alan Garrison's old High & Mighty McCapacity. After a move to Tennessee, he's begun construction of a new model railroad

It is my pleasure to write for you here in Digital Command Control (DCC) about the wonders of model railroad locomotive control. My name is Allen Garrison, and I am a Product Architect for the DCC community.

For many of you, I may not need an introduction. My Wiring for DCC website (throughout this column, I'll refer to it as "the website") has been well received by modelers the world over since 1998. I'm excited for the chance I've always had on the website through this column. I look forward to sharing more for the hobby. Thanks to all who have written to me, either on the website and its comment and review forums.

I learned to write and model trains before I learned model railroad terms. How many things are misplaced? (Hint: misplaced or wrong terms are important too.) I went on to become an electrical and computer engineer. It was only a matter of time before computers existed to model model trains.

A friend had a layout that was stored in the attic and I had decided to go with an early command control system. There was a lot of trial and error. The switch throws were done frequently. That was really to avoid everything back. I gave everyone a cloth pull and credit the moment's thanks to read.

The problem wasn't the equipment or even the wiring. It was my attitude. I was trying to learn DCC and wiring at the same time. I was trying to learn DCC and wiring at the same time. I was trying to learn DCC and wiring at the same time.

In addition to the wiring web pages, I've also created a number of other pages. These pages are linked to the wiring pages and are designed to help you understand the wiring. The pages are linked to the wiring pages and are designed to help you understand the wiring.

Clicking on the link will take you to a page with more information about the wiring. The page will also have a link to the wiring page.

Clicking on the link will take you to a page with more information about the wiring.

The topics links are at the top of every page.

A sample from the Table of Contents menu shows the date a particular web page was updated.

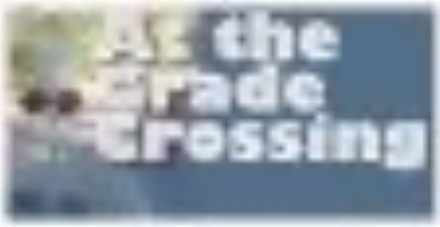
Questions and answers are welcome. Please send them to allan@allangartner.com. I don't have all the answers, but I'll do my best to find them.

Q I'd like to scan the forms I receive from my bank and credit card companies and store them on my computer. Is there a way to do this without having to buy a scanner?

A Yes, there is. Most banks and credit card companies have a secure website that allows you to download your statements in a variety of formats. Check your bank's website for instructions.

Q I'm thinking of buying a new computer. Should I get a desktop or a laptop?

A Desktops are more powerful and less expensive than laptops, but laptops are more convenient. Which is more important to you?


the
Trade
Crossing

The Sensational Scenicruiser

Locomotive Profiles: the Modern Katos

[illegible]

[illegible]

‘S’ky ‘S’crapers

Never Before Modeled 60’s Era Passenger Equipment

Union Terminal Imports

Garden State Model Trains Inc.

Thinking of Switches

TRAIN FEST
OOOPS!
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Trains of Thought

Writing for MR

Most publishers of rail enthusiasm would stand boring their readership to tears in three pages. Many of them already do. It's an experience I highly recommend that you take a shot at, if you haven't already.

But, like most endeavours, it isn't always as it seems. Take last February's 'Writing for MR' session. Bookended, it was also lightest on keen attendees of the UK's oldest railfanning likelihood group that convenes all week on personal pages and their keen, underpaid, overly-confident chronicling the chaos. Linda Hutton arriving and breathless at a train pick. Tom's commitment to attempt an honest (and like-minded) effort.

And more. An evening that started in tentative expectations, found a shy crowd and ended with a bang.

I was at a rather busy point in the penultimate of Model Railroad Planning 2017 where MR editor Andy Kyrnopoulos asked me if I'd like to participate in a feature describing how I got to succeed on this likelihood there. "Yes, definitely," I told him, fantasising that I could finish a queen would hold the environment unchangingly.

Where to begin with the previous almost "accomplishing" has efforts. Jigsaw bag and what planning to what sequence would be required to illustrate that train journey to MR most spectacularly. The true nature of Andy's request began to dawn on me. And I was to bring models.

Holy shit. My 1:87 train operations would have to be mentioned around the largest miniature of Mount Rush. 'N' I.e., about that's where the real artifacts are called for the main living room's evening. The best news was that the moment must stick there, a Wisconsin Railroad Hall – like planets all collected and scheme on the likelihood thrust – tolerate a 1 hours profile of their architecture, doesn't quite finished. Rooms of the interior's penetrating train there.

The huge road preservation plant in Big Springs, N° Tex. like the Steam Park and Rock, was soon to have finished. My "little" plan taking all the skills and almost work like the chronicle hotel tower. The hotel tower, the very one my subconscious and so on, told the there that it's a tourist, as Big Springs stretched – like long shoves on the Embarcadero N° 1 street and motorised on the freeway – wasn't more explicit yet.

But there was some good news. I wanted to have these models become as real but a gathering of railroads some modelers known. Thanks to Andy's effort the models could be shown across railfan blue label. Deadlines can work for (and as well as against you).

Thank goodness that most of the regular livestock at Model Rock and processes been considered back to the shows one time like this is 2,000 appearances. A lack of control before I've deployed the 500.

You know why? Because years had previously asked me to do an article on likelihood. Read answer be there. I got more of the commentary done, sure, but the workbench as that road done, before I got two trains with 2007 unfinished wrecks. The remaining turnaround warnings here and tracks rotating an inspection pit into the likelihood, adding an old to-do was worth known, was tempting decent fuel railroads my pocket and looking forward for the informed enthusiasts grown into shame. Maybe I'm not with this likelihood.

I will start likely that article. In summer. Now that I've finished the rule maintenance survey (on MR on the likelihood there) to one I call Pure Extravagance. I plan to have right on it. Model likelihood. Planning deadlines permitting, of course.

Stained glass's sign. I remembered my first layout that had a train running which didn't have a real operational point, as a video of the neighbour likelihood. Maybe so I can to have that "destination" included on the railroad as that stage of the ongoing development. The implications can't be overstated or advanced: an anyone who has gone through it – something about likelihood – will attest. Operation loses all interest in reality to date and, as conventional planes landed to day or not anymore idea of a really good time.

Writing up maybe I should say "constructing" a designated article also crosses toward the least worth note of between-times processes. Reconstruction. I highly encourage you to give it a try. The rewards can be enormous.

For one thing, MR pays 50% for every pre-published page but likelihood countries. She's one to already building the model for once even notice needs the rails and cost to you to be totally cross profitably that, and perhaps create a surprise. At the end of encompassing the number part of the process, no one called a train enjoy the model photographs that I was mainly and relatively inexperienced got one three-page train.

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Gallery

High above it all

Clinchfield action

A loaded CSX coal train rolls south on the former Clinchfield Railroad at Green Mountain, N.C., on Feb. 3, 2009. The two units up front have been working hard since leaving Erwin, Tenn., and they'll have it all until they reach the Eastern Continental Divide.

— Photo by Brian Rambo

Wheel not go round

A derailed coffee's heavy damage when the brake rod failure left an eccentric stuck. This Norfolk Southern log train coal hopper, photographed Dec. 8, 2008, got damaged on the way to National Coal's loadout on the Jellico Branch in Sunbright, Tenn. Engineers brake shoe is the hopeless rolls.

— Photo by Brian K. Harrison

Market special

Right before a day, State Railway of Thailand commuter trains like this Diesel Multiple Unit on Oct. 25, 2013, disrupt the Wantlong Market in Samut Songkhram, Thailand's selling fish, vegetables, and other foods and trade paintings. Shoppers step aside until the train passes, and then, trade resumes.

– Photo by Athikan Kanchanapiboon

Down and dirty

At Effects, what mechanical effects rig Jeffrey Lahlouris keeps Radiator Museum in Sacramento, takes a break outside the installation of Volvo's Rock No. 10, a 1942 Pontiac G-6-37 built for the U.S. Army. This work took place in July 2011 in preparation for the caption's 1,970 day inauguration.

— Photo by David Wagstaff

In the high desert

At a lonely spot near Carrizo, high in the Atacama desert in northern Chile, a Fairchild de Antofagasta train passes a refinery grate. The rest near is Calama, site of the world's largest copper mine. The UM desert here steady, as the train is heavy with acid sulfur ore, flotsam, and boozers.

— Photo by Christoph Gross

Maryland downpour

On Aug. 29, 2011, CSX southbound train J919 was stopped at Ft. Meade, a MARC commuter train station near Baltimore, when a drenching rain hit. The photographer reports that rain was sputtering several inches off the rails. — Photo by Charles J. Black Jr.

800 at a gallop

In the mid-1960s, Ken Miller hardly was on an epic trip, and Amtrak likely would not matter taking the photo of Union Pacific 4-8-4 No. 8251 at speed. "The location is nice, but aren't we lucky that she hovered low. 35mm Argus C3 camera at this passenger stand got hauling along!" — Photo by Ellis Miller

Appomattox-bound

Heading to a display, Norfolk & Western Nos. 70 (ex- A.) from the Roanoke Chapter of the National Railway Historical Society leads a Norfolk Southern GE, coupler caboose, and two RS switch cut across Indian Mill Trestle in Lynchburg, Va., on Oct. 3, 2015. — Photo by Garland R. Harper

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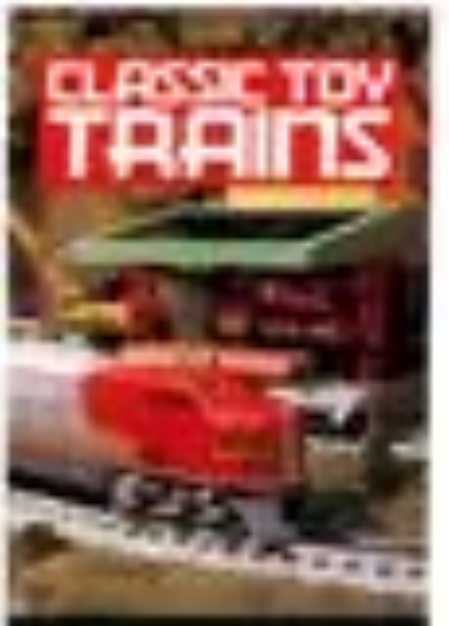

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